JULY 1981 NUMBER 443 -- Part I

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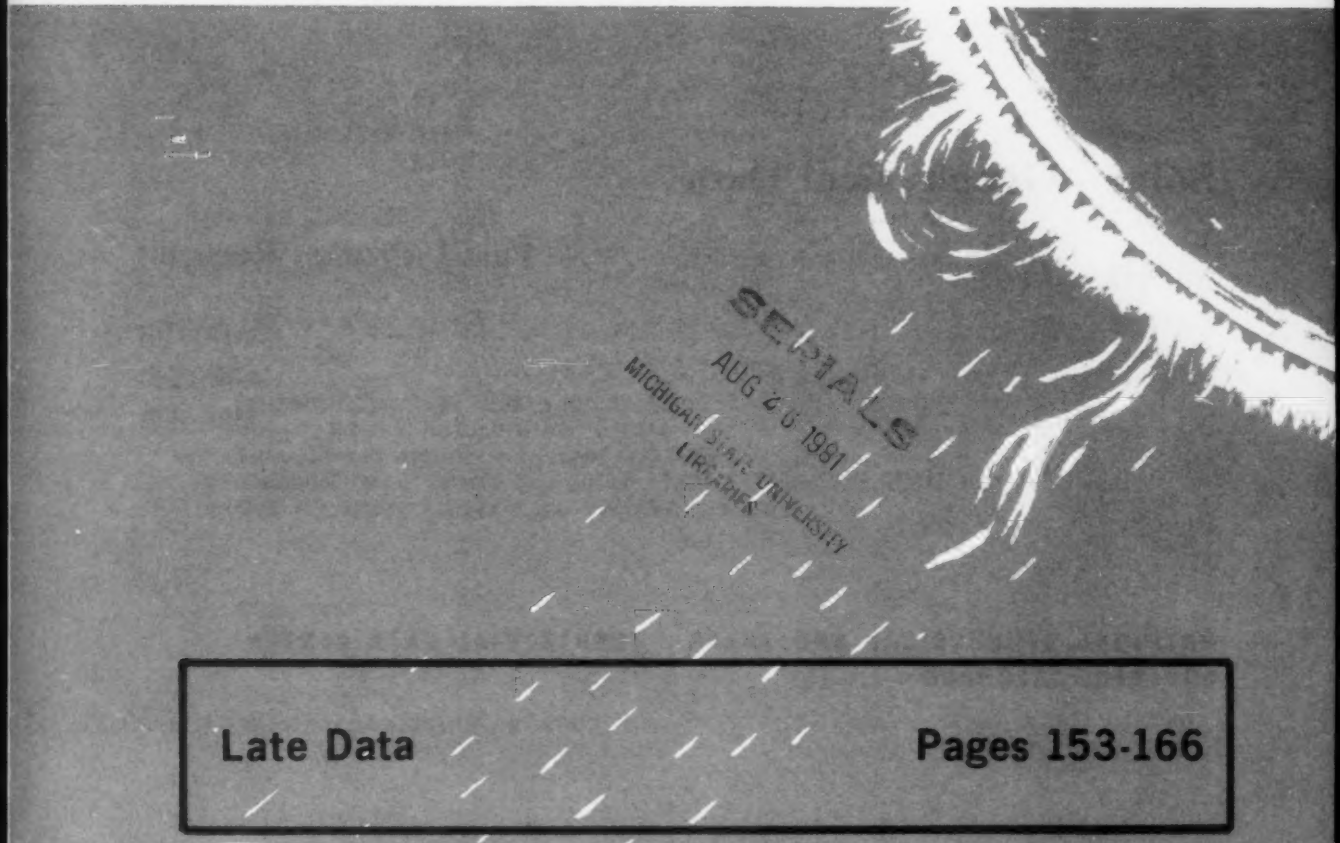

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Solar - Geophysical Data

NO. 443 JULY 1981

Part I (Prompt Reports)

DATA FOR
JUNE 1981
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SOLAR-GEOPHYSICAL DATA

No. 443

Issued in two parts

Helen E. Coffey, Editor

Joe H. Allen, Chief
Solar-Terrestrial Physics Division

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Notes:

"432A 50" listed under 1980 Jun means that the sunspot drawings for Jun 1980 were contained in *Solar-Geophysical Data* Number 432 - Part I, beginning on page 50.

A = Part I, B = Part II.

----- = no data available.
blank = data not yet received.

SGD 443 Part I (Prompt)

JUNE 1981 DATA

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ALERT PERIODS
INTERNATIONAL URSIGRAM AND WORLD DAYS SERVICE
JUNE 1981

PRESTO MESSAGES (THE RAPID REPORT OF MAJOR EVENTS)

11 JUNE 1981 PRESTO TOYOKAWA 10/0835Z TENFLARE 130 FLUX UNITS 10/0622Z DURATION 20 MINUTES
22 JUNE 1981 PRESTO BOULDER 22/1650Z TENFLARE 330 FLUX UNITS 22/1448Z DURATION 40 MINUTES
23 JUNE 1981 PRESTO BOULDER 23/1747Z TENFLARE 2600 FLUX UNITS 23/1733Z DURATION 18 MINUTES
24 JUNE 1981 PRESTO SYDNEY 24/0650Z TENFLARE 460 FLUX UNITS 24/0631Z ONE BRIGHT FLARE RGN 3170 N14E16
STRONG SWEEP POSSIBLY TYPE IV M1 X-RAY
24 JUNE 1981 PRESTO TOYOKAWA 24/0725Z TENFLARE 470 FLUX UNITS 24/0630Z DURATION 10 MINUTES
24 JUNE 1981 PRESTO BOULDER 24/1300Z TENFLARE 460 FLUX UNITS 24/0630Z DURATION 5 MINUTES
25 JUNE 1981 PRESTO TOYOKAWA 25/0123Z TENFLARE 120 FLUX UNITS 25/0057Z DURATION 20 MINUTES
25 JUNE 1981 PRESTO BOULDER 25/2255Z TENFLARE 320 FLUX UNITS 25/2212Z DURATION 7 MINUTES
25 JUNE 1981 PRESTO BOULDER 25/2245Z TENFLARE 376 FLUX UNITS 25/2200Z DURATION 7 MINUTES
25 JUNE 1981 PRESTO SYDNEY 25/2245Z TENFLARE 316 FLUX UNITS 25/2200Z DURATION 7 MINUTES
26 JUNE 1981 PRESTO TOYOKAWA 26/0106Z TENFLARE 420 FLUX UNITS 25/2156Z DURATION 10 MINUTES
27 JUNE 1981 PRESTO BOULDER 27/1338Z TENFLARE 520 FLUX UNITS 27/1255Z DURATION 15 MINUTES
28 JUNE 1981 PRESTO TOYOKAWA 28/0010Z TENFLARE 240 FLUX UNITS 27/0847Z DURATION 40 MINUTES
28 JUNE 1981 PRESTO TOYOKAWA 28/0410Z TENFLARE 100 FLUX UNITS 28/0358Z DURATION 8 MINUTES

SUMMARY OF THE GEOALERT WWA MESSAGES

Message serial number	Date of issue	Date of observation	Wolf number	10 cm solar flux	A index	Active Regions: Location Lat-Long	No. of Flares: Total	M	X	Outstanding events	Forecasts: Date	Location Lat-Long	Desc*	Alert Situations
152	01	31	166	152	010	N18W85	0	0	0		01	N18W85	E	SOLQUIET
						S13W82	0	0	0			S13W82	Q	MAGQUIET
						N02W62	1	0	0			N02W62	E	
						S06W18	0	0	0			S06W18	Q	
						N06E03	0	0	0			N06E03	Q	
						N06E04	0	0	0			N06E04	Q	
						N14E10	0	0	0			N14E10	E	
						N06E13	0	0	0			N06E13	Q	
						N25E50	0	0	0			N25E50	Q	
						N21E75	0	0	0			N21E75	Q	
153	02	01	102	145	008	N03W77	1	0	0		02	N03W77	E	SOLQUIET
						S06W32	1	0	0			S06W32	E	MAGQUIET
						N06W13	0	0	0			N06W13	Q	
						N14W03	1	0	0			N14W03	E	
						N24E35	0	0	0			N24E35	Q	
						N20E61	0	0	0			N20E61	Q	
154	03	02	075	140	008	N02W90	0	0	0		03	N02W90	E	SOLQUIET
						S06W45	0	0	0			S06W45	Q	MAGQUIET
						N06W26	0	0	0			N06W26	Q	
						N14W17	1	0	0			N14W17	E	
						N18E49	0	0	0			N18W49	Q	
155	04	03	077	131	011	S06W55	0	0	0		04	S06W55	Q	SOLQUIET
						N14W30	1	0	0			N14W30	Q	MAGQUIET
						N09W09	0	0	0			N09W09	Q	
						S11E55	0	0	0			S11E55	Q	
						S08E59	0	0	0			S08E59	Q	
156	05	04	097	130	007	S07W75	3	0	0		05	S07W75	Q	SOLQUIET
						N15W45	1	0	0			N15W45	Q	MAGQUIET
						N24W19	1	0	0			N24W19	Q	
						N11E21	0	0	0			N11E21	Q	
						S11E41	0	0	0			S11E41	Q	
						S07E45	1	0	0			S07E45	Q	
						N14E69	2	0	0			N14E69	Q	
157	06	05	131	132	006	S07W88	0	0	0		06	S07W88	Q	SOLQUIET
						N16W60	2	0	0			N16W60	Q	MAGALERT MINOR 06
						N16W37	0	0	0			N16W37	Q	
						N12E05	0	0	0			N12E05	Q	
						N03E08	0	0	0			N03E08	Q	
						N15E27	0	0	0			N15E27	Q	
						S11E27	0	0	0			S11E27	Q	
						S08E33	0	0	0			S08E33	Q	
						N08E35	0	0	0			N08E35	Q	
						N15E55	1	0	0			N15E55	Q	
						N11E84	0	0	0			N11E84	Q	
158	07	06	097	137	011	N15W77	0	0	0		07	N15W77	E	SOLQUIET
						N11W03	0	0	0			N11W03	Q	MAGNIL
						S08E19	0	0	0			S08E19	Q	
						N07E20	0	0	0			N07E20	Q	
						N13E42	0	0	0			N13E42	Q	
						N12E69	0	0	0			N12E69	E	
159	08	07	094	142	038	N24W43	0	0	0		08	N24W43	Q	SOLQUIET
						N11W10	0	0	0			N11W10	Q	MAGALERT 08
						S08E06	1	0	0			S08E06	Q	
						N13E27	0	0	0			N13E27	Q	
160	09	08	097	144	015	N24W55	0	0	0		09	N24W55	Q	SOLQUIET
						N12W23	0	0	0			N12W23	Q	MAGNIL
						S09W08	0	0	0			S09W08	E	
						N13E16	0	0	0			N13E16	Q	
						N12E44	2	0	0			N12E44	E	
						S25E65	0	0	0			S25E65	Q	
161	10	09	071	148	007	N11W35	0	0	0		10	N11W35	Q	SOLQUIET
						S09W20	1	0	0			S09W20	Q	MAGQUIET
						N12E29	6	0	0			N12E29	E	
						S26E54	0	0	0			S26E54	Q	
						S23E71	5	0	0			S23E71	Q	
162	11	10	098	152	007	N12W49	0	0	0		11	N12W49	Q	SOLQUIET
						S09W36	0	0	0			S09W36	Q	MAGQUIET
						N13E17	3	1	0			N13E17	E	
						S26E40	3	0	0			S26E40	Q	
						S23E56	3	0	0			S23E56	E	
						S25E75	0	0	0			S25E75	Q	
163	12	11	096	150	007	S09W48	1	0	0	Presto Toyokawa	12	S09W48	Q	SOLQUIET
						N15E05	1	0	0	10/0835Z Tenflare		N15E05	Q	MAGQUIET
						S26E25	0	0	0	130 Flux Units		S26E25	E	
						S24E44	0	0	0	10/0625Z Duration		S24E44	Q	
						S26E64	1	0	0	20 Minutes		S26E64	Q	

ALERT PERIODS

INTERNATIONAL URSIGRAM AND WORLD DAYS SERVICE

JUNE 1981

SUMMARY OF THE GEOALERT WWA MESSAGES

Message serial number	Date of issue	Date of observation	Wolf number	10 cm solar flux	A index	Active Regions: Location Lat-Long	No. of Flares: Total	M	X	Outstanding events	Forecasts: Date	Location Lat-Long	Desc*	Alert Situations
164	13	12	097	147	005	N12W10	2	0	0		13	N12W10	Q	SOLQUIET
						S25E12	1	0	0			S25E12	Q	MAGQUIET
						S23E30	1	0	0			S23E30	Q	
						S25E51	0	0	0			S25E51	E	
						S19E67	0	0	0			S19E67	Q	
165	14	13	148	148	008	N12W23	3	0	0		14	N12W23	E	SOLQUIET
						N14W11	0	0	0			N14W11	Q	MAGQUIET
						N12W09	0	0	0			N12W09	Q	
						S25E00	2	0	0			S25E00	Q	
						N19E15	0	0	0			N19E15	Q	
						S23E19	3	0	0			S23E19	E	
						S25E39	0	0	0			S25E39	E	
						N07E51	2	0	0			N07E51	Q	
						S19E54	1	0	0			S19E54	Q	
166	15	14	148	154	006	N12W34	4	0	0		15	N12W34	E	SOLQUIET
						N14W25	0	0	0			N14W25	Q	MAGQUIET
						N12W23	10	0	0			N12W23	Q	
						S24W14	4	0	0			S24W14	E	
						S22E09	0	0	0			S22E09	Q	
						S25E26	3	0	0			S25E26	E	
						N06E39	1	0	0			N06E39	Q	
						S20E43	0	0	0			S20E43	Q	
167	16	15	191	160	012	N12W49	1	0	0		16	N12W49	Q	SOLQUIET
						N12W36	1	0	0			N12W36	Q	MAGQUIET
						N13W36	2	0	0			N13W36	Q	
						S25W26	0	0	0			S25W26	Q	
						N18W11	0	0	0			N18W11	Q	
						S23W05	0	0	0			S23W05	Q	
						S25E14	0	0	0			S25E14	Q	
						N07E25	2	0	0			N07E25	Q	
						S21E30	3	0	0			S21E30	E	
168	17	16	170	164	013	N12W65	0	0	0		17	N12W65	Q	SOLQUIET
						N14W50	2	0	0			N14W50	Q	MAGQUIET
						S24W42	5	0	0			S24W42	Q	
						N20W34	0	0	0			N20W34	Q	
						S23W19	0	0	0			S23W19	Q	
						S25W00	1	0	0			S25W00	Q	
						N07E11	0	0	0			N07E11	Q	
						S21E16	3	0	0			S21E16	Q	
						S25E58	0	0	0			S25E58	Q	
169	18	17	168	166	015	N12W78	0	0	0		18	N12W78	Q	SOLQUIET
						N13W64	2	0	0			N13W64	Q	MAGQUIET
						S26W53	2	1	0			S26W53	E	
						S23W32	4	1	0			S23W32	Q	
						S26W13	0	0	0			S26W13	Q	
						N08W02	0	0	0			N08W02	Q	
						S21E03	5	0	0			S21E03	E	
						S26E74	0	0	0			S26E74	Q	
170	19	18	164	165	009	N16W77	3	0	0		19	N16W77	Q	SOLQUIET
						S25W67	2	0	0			S25W67	Q	MAGQUIET
						S22W46	3	1	0			S22W46	Q	
						S26W27	0	0	0			S26W27	Q	
						N08W15	0	0	0			N08W15	Q	
						S20W10	2	0	0			S20W10	E	
						N18E00	0	0	0			N18E00	Q	
						S28E33	1	0	0			S28E33	Q	
171	20	19	138	161	010	N14W91	1	0	0		20	N14W91	Q	SOLQUIET
						S25W81	0	0	0			S25W81	Q	MAGQUIET
						S23W58	2	0	0			S23W58	Q	
						S25W40	0	0	0			S25W40	Q	
						N08W28	0	0	0			N08W28	Q	
						S20W24	1	0	0			S20W24	E	
						S27E20	0	0	0			S27E20	Q	
						N36E22	0	0	0			N36E22	Q	
						N17E71	0	0	0			N17E71	Q	
172	21	20	139	155	011	S23W71	0	0	0		21	S23W71	Q	SOLQUIET
						S26W51	0	0	0			S26W51	Q	MAGQUIET
						N07W40	1	0	0			N07W40	Q	
						S20W36	0	0	0			S20W36	Q	
						S27E07	0	0	0			S27E07	Q	
						N34E08	0	0	0			N34E08	Q	
						N14E62	6	0	0			N14E62	E	
						S15E67	0	0	0			S15E67	Q	
						S08E80	0	0	0			S08E80	Q	
173	22	21	146	149	009	S24W83	1	0	0		22	S24W83	Q	SOLQUIET
						S26W63	0	0	0			S26W63	Q	MAGQUIET
						N07W55	1	0	0			N07W55	Q	
						S20W49	7	0	0			S20W49	E	
						S26W06	0	0	0			S26W06	Q	
						S12E35	0	0	0			S12E35	Q	
						N15E49	8	0	0			N15E49	E	

ALERT PERIODS

INTERNATIONAL URSIGRAM AND WORLD DAYS SERVICE

JUNE 1981

SUMMARY OF THE GEOALERT WWA MESSAGES

Message serial number	Date of issue	Date of observation	Wolf number	10 cm solar flux	A index	Active Regions				Outstanding events	Forecasts			Alert Situations
						Location Lat-Long	No. of Flares Total	M	X		Date	Location Lat-Long	Desc*	
						S16E54	1	0	0			S16E54	Q	
						S08E67	0	0	0			S08E67	Q	
174	23	22	166	161	006	S26W76	0	0	0	Presto Boulder 22/	23	S26W76	Q	SOLQUIET
						N09W69	0	0	0	1650Z Tenflare 330		N09W69	Q	MAGQUIET
						S21W62	0	0	0	Flux Units 22/1448Z		S21W62	E	
						S28W19	0	0	0	Duration 40 Minutes		S28W19	Q	
						N16W12	0	0	0			N16W12	Q	
						N09E03	0	0	0	.		N09E03	Q	
						S21E22	0	0	0			S21E22	Q	
						N15E36	4	1	0			N15E36	E	
						S16E40	0	0	0			S16E40	Q	
						S07E56	1	0	0			S07E56	Q	
175	24	23	199	161	007	N10W83	0	0	0	Presto Boulder	24	N10W83	Q	SOLALERT 24/25
						S19W77	1	0	0	23/1755Z Tenflare		S19W77	Q	MAGQUIET
						S27W33	0	0	0	2600 Flux Units		S27W33	Q	
						N15W26	0	0	0	23/1733Z Duration		N15W26	Q	
						N16W09	0	0	0	18 Minutes		N16W09	Q	
						N07W08	0	0	0			N07W08	Q	
						S12E06	0	0	0			S12E06	Q	
						S27E06	0	0	0			S27E06	Q	
						N14E22	6	2	0			N14E22	A	
						S16E24	0	0	0			S16E24	Q	
						S07E44	0	0	0			S07E44	Q	
						N19E77	3	0	0			N19E77	Q	
176	25	24	182	169	010	N10W94	0	0	0	Presto 24/0650Z	25	N10W94	Q	SOLALERT 25/26
						S21W86	0	0	0	Tenflare 460 Flux		S21W86	Q	MAGQUIET
						S27W45	1	0	0	Units 24/0630Z		S27W45	Q	
						N15W40	0	0	0	Duration 10 Minutes		N15W40	Q	
						N07W23	0	0	0			N07W23	Q	
						S13W07	0	0	0			S13W07	Q	
						N14E09	9	1	0			N14E09	A	
						S16E12	0	0	0			S16E12	Q	
						S08E31	0	0	0			S08E31	Q	
						N19E67	6	1	0			N19E67	E	
177	26	25	207	178	018	N15W54	1	0	0	Presto 25/0123Z	26	N16W54	Q	SOLALERT 26/XX
						S13W19	0	0	0	Tenflare 120 Flux		S13W19	Q	MAGALERT MINOR 28
						S21W13	0	0	0	Units 25/0057Z Dur-		S21W13	Q	
						N13W05	8	2	0	ation 20 Minutes		N13W05	A	
						S16E01	0	0	0	Presto 25/2255Z Ten		S16E01	Q	
						S08E18	2	0	0	flare 320 Flux Units		S08E18	Q	
						N18E51	4	1	0	25/2200Z Duration		N18E51	E	
						S16E70	0	0	0	7 Minutes		S16E70	Q	
178	27	26	205	188	016	N15W69	0	0	0		27	N15W69	Q	SOLALERT 27/XX
						S12W34	0	0	0			S12W34	Q	MAGALERT 28
						S21W29	0	0	0			S21W29	Q	
						N13W19	9	2	0			N13W19	A	
						S08E05	1	0	0			S08E05	Q	
						N18E36	4	1	0			N18E36	E	
						S17E60	5	0	0			S17E60	Q	
						N18E72	0	0	0			N18E72	Q	
179	28	27	209	187	015	N15W82	1	0	0	Presto 27/1338Z	28	N15W82	Q	SOLALERT 28/XX
						N14W33	6	1	0	Tenflare 520 Flux		N14W33	A	MAGALERT 28/30
						S13W19	0	0	0	Units 27/1255Z Dur-		S13W19	Q	
						S07W09	1	0	0	ation 15 Minutes		S07W09	Q	
						N19E23	2	2	0	Presto 28/0010Z		N19E23	A	
						S16E47	7	1	0	Tenflare 240 Flux		S16E47	E	
										Units 27/0847Z Dur-				
										ation 40 Minutes				
180	29	28	227	181	013	N10W73	0	0	0	Presto 28/0410Z Ten-	29	N10W73	A	SOLALERT 29/XX
						S21W56	0	0	0	flare 100 Flux Units		S21W56	Q	MAGALERT 29/XX
						N15W47	4	0	0	28/0358Z Duration		N15W47	A	
						S12W31	0	0	0	8 Minutes		S12W31	Q	
						S07W19	1	0	0			S07W19	Q	
						N20E10	3	0	0			N20E10	Q	
						S15E34	3	1	0			S15E34	A	
						N20E48	0	0	0			N20E48	Q	
181	30	29	211	183	032	S20W70	2	0	0		30	S20W70	Q	SOLALERT 30/01
						N13W59	2	1	0			N13W59	A	MAGALERT 30/01
						S07W34	0	0	0			S07W34	E	
						S13W30	1	0	0			S13W30	Q	
						N19W02	1	0	0			N19W02	Q	
						S06E06	0	0	0			S06E06	Q	
						N19E09	0	0	0			N19E09	Q	
						S15E21	4	1	0			S15E21	A	
						N19E34	0	0	0			N19E34	E	
182	01	30	244	173	012	S18W83	0	0	0		01	S18W83	Q	SOLALERT 01
						N14W76	1	0	0			N14W76	E	MAGNIL
						S07W44	0	0	0			S07W44	E	
						S12W44	0	0	0			S12W44	Q	
						N19W16	0	0	0			N19W16	E	
						S07W09	0	0	0			S07W09	Q	
						N18W04	0	0	0			N18W04	Q	
						S15E07	3	0	0			S15E07	A	
						N18E20	0	0	0			N18E20	Q	
						S16E23	0	0	0			S16E23	Q	
						S04E27	0	0	0			S04E27	Q	

* Q=Quiet E=Eruptive A=Active P=Proton C=Caution D=Doubtful O.G.=Other Groups MF=Major Flare

RELATIVE SUNSPOT NUMBERS

ZURICH, R_Z

1980 FINAL — 1981 PROVISIONAL*

DAY	JUL	AUG	SEP	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN
1	101	78	200	151	188	171	147	148	147	132	112	62
2	108	63	226	135	218	176	141	132	182	170	133	59
3	97	65	232	139	204	152	122	154	169	140	156	44
4	83	65	233	121	217	146	113	126	183	151	152	62
5	96	53	188	96	201	131	94	133	141	157	162	55
6	98	72	179	116	196	126	71	172	138	132	178	57
7	97	64	136	135	175	108	89	158	138	152	171	61
8	87	98	140	173	201	124	115	129	142	195	177	52
9	84	125	108	186	158	117	126	124	124	199	158	58
10	86	138	119	235	158	145	120	157	127	199	148	55
11	87	181	125	260	144	148	123	178	138	200	169	66
12	98	174	128	256	120	178	126	185	128	193	183	79
13	105	172	133	213	103	185	123	153	127	197	149	86
14	128	193	108	232	108	213	106	142	128	188	140	99
15	161	192	83	224	105	217	106	124	118	212	141	104
16	198	196	98	202	112	237	81	129	128	197	127	109
17	211	198	93	158	109	198	72	120	109	213	124	119
18	241	195	114	142	113	183	79	131	95	214	119	104
19	220	185	137	137	125	166	78	138	86	203	108	85
20	227	179	158	167	112	171	88	133	120	199	77	71
21	229	152	134	155	107	170	105	142	135	170	99	87
22	201	139	147	164	119	178	99	136	134	122	106	106
23	184	154	158	140	112	177	115	98	121	108	93	119
24	155	122	178	127	128	191	120	124	125	92	96	109
25	151	109	168	118	127	200	115	137	142	119	93	127
26	138	101	209	119	148	208	120	169	133	98	105	127
27	117	98	231	134	168	206	115	175	126	73	79	133
28	127	124	181	136	167	206	142	170	135	72	93	112
29	118	158	166	173	148	208	165		160	106	92	138
30	108	184	149	184	153	187	174		184	92	83	148
31	81	194		178		182	159		108		92	
MEAN	136.3	135.4	155.0	164.7	147.9	174.4	114.4	143.5	133.8	156.2	126.0	89.0

1980 YEARLY MEAN = 154.6

* ZURICH R_Z SUNSPOT NUMBER REPLACED BY INTERNATIONAL R_I SUNSPOT NUMBER BEGINNING WITH JANUARY 1981 DATA.

DAILY SOLAR FLUX AT 2800 MHz
OTTAWA ARO

FLUX ADJUSTED TO 1 A.U., S_a

1980 — 1981

DAY	JUL	AUG	SEP	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN
1	160.0*	131.9	213.2*	171.1	226.3	223.0	189.7	207.3	224.4*	210.8*	188.0	149.6
2	154.9	131.8	224.5*	167.9*	234.2	213.3	181.4	210.1	230.6*	211.2*	193.4	144.3
3	147.7	133.2	232.1	174.1	241.6	197.9	173.1	205.4*	238.9*	221.2	206.5*	134.9
4	146.7	138.9	225.1	175.2	249.9*	199.4	166.8	197.5	245.6*	219.7	221.2	133.8
5	152.5*	132.6	215.6*	182.6	263.3*	186.4	161.8	187.8	227.3	226.2	237.5	136.0
6	150.1	143.2*	210.9	185.3*	273.9*	171.8	157.4	185.4*	212.7	235.7	231.2	140.6
7	152.5	142.3	213.8	190.7*	272.7	176.4	168.6*	186.5*	201.4	242.3	234.2	146.7
8	152.8	146.4	208.9	212.1*	266.2*	169.3	169.2	179.1	200.6*	260.8*	222.4*	146.7*
9	155.2	156.5	189.7	223.4*	255.4*	175.1	167.8	176.7	202.9	287.7	210.6	152.8
10	162.3*	173.5	188.7	232.7	257.2*	180.5	164.6	185.2	203.1	268.8*	217.7*	157.1
11	173.3	184.1	188.1	240.7	256.8*	203.5*	168.5	186.4*	199.7	272.1	220.1*	154.8
12	178.8	189.6	178.9	247.8*	233.2*	240.5*	156.6	190.6*	188.8	251.9	223.4	152.8
13	196.8	193.3*	171.9	253.3*	226.8	244.2	158.1	197.8	202.1	254.9*	221.3	152.6
14	209.7	191.7*	163.4	251.1	218.8*	253.2	153.9	200.3	208.9	256.5*	232.5	159.1
15	218.4	191.9	153.8	237.0	205.2*	266.2	149.8	193.5	206.3*	254.9*	223.9	164.7
16	235.4*	195.7	159.6	214.9	191.1	273.8	152.5	186.9	194.9	247.5*	210.9	169.1
17	250.2*	197.7*	158.8	201.1	181.6*	254.8	155.3	188.1*	181.5	242.7	207.6	171.2
18	249.8*	204.3*	154.4	200.6	174.9	255.1	161.0	190.2*	180.8	229.2	194.4	170.1
19	255.2*	201.4	160.1*	203.3	172.4	238.5	165.4	178.8	175.1	214.9	186.6*	165.9
20	258.0	193.0	167.5	200.5	161.6	235.9*	159.9*	188.3	182.7	200.9*	180.0	159.0
21	254.0	194.1	159.6	204.2	161.0	224.8	156.6	189.9*	189.5	196.1	180.4	153.6
22	248.7	178.3*	178.6	205.3*	171.4	231.2	156.4	199.5	189.4*	191.5	169.3*	166.1*
23	235.1	174.1	188.7*	196.1	167.2	226.0	156.8	217.9*	188.8*	204.9	159.6	171.2*
24	222.2	164.3*	191.3	192.5	174.9*	223.6	157.3	231.5*	191.4	203.8*	169.8	174.6
25	206.4	153.8*	183.8	182.9	176.4*	220.7	169.2*	233.8	199.3	203.8*	177.2	183.6
26	197.4	154.6	184.3	188.3*	189.6	220.1	174.6	238.5	198.6*	198.8	173.8	193.9
27	188.4	159.3	183.2*	177.2	185.3	220.3	175.8*	235.4	197.6	194.7*	177.8	193.4
28	169.5	168.3	185.2	178.2*	191.4	231.5*	197.2*	224.9*	203.7*	178.2*	181.3	191.6
29	155.3	178.5	178.2*	186.4	206.1*	217.2	204.2		212.4*	176.9	178.6	187.5*
30	143.3	191.4*	174.1	201.8	216.3	209.9	209.1		208.2	175.3	164.6*	179.8
31	136.5	198.7*		211.5		199.8	209.1		214.8*		156.1	
MEAN	190.8	170.3	185.9	202.9	213.4	210.8	169.8	199.5	203.2	224.7	198.9	161.9

* adjusted for burst
A = interpolated data point

DAILY SOLAR INDICES

JUNE 1981

DAY OF MONTH	YEAR DAY	BARTELS 27-DAY CYCLE NUMBER	PROVISIONAL SUNSPOT NUMBERS		OBSERVED FLUX OTTAWA 2800	SOLAR FLUX ADJUSTED TO 1 A.U.								
			R_I	$R_{A'}$		AFGL 15400	AFGL 8800	AFGL 4995	OTTAWA 2800	AFGL 2695	AFGL 1415	AFGL 606	AFGL 410	AFGL 245
1	152	23	62	63	145.4	589	324	165	149.6	143	119		38	16
2	153	24	59	53	140.2	578	309	156	144.3	135	113		38	13
3	154	25	44	48	131.1	590	317	153	134.9	127	109		36	15
4	155	26	62	52	130.0	574	292	145	133.8	126	111		33	15
5	156	27	55	52	132.0	583	304	148	136.0	129	119		34	17
6	157	1	57	60	136.5	565	310	154	140.6	129	108		33	14
7	158	2	61	66	142.4	586	317	153	146.7	138	123		35	13
8	159	3	52	53	142.4*	588	320	157	146.7*	139	125		35	13
9	160	4	58	55	148.2				152.8					
10	161	5	55	62	152.4	583	313	161	157.1	148	134		35	14
11	162	6	66	64	150.1				154.8					
12	163	7	79	93	147.4	573	304	157	152.0	145	132		34	15
13	164	8	86	95	147.9				152.6					
14	165	9	99	106	154.2	582	316	162	159.1	148	142		37	18
15	166	10	104	139	159.6	578	319	166	164.7	153	141		37	19
16	167	11	109	132	163.9				169.1					
17	168	12	119	116	165.9				171.2					
18	169	13	104	119	164.7				170.1					
19	170	14	85	86	160.6		330	167	165.9	151	144			
20	171	15	71	77	154.7	573	319	167	159.8	147	140		36	16
21	172	16	87	98	148.7	584	328	173	153.6	145	129		34	16
22	173	17	106	129	160.8*	593	345	195	166.1*	165	145		38	18
23	174	18	119	106	165.7*				171.2*					
24	175	19	109	111	169.0				174.6					
25	176	20	127	149	177.7				183.6					
26	177	21	127	154	187.5	609	347	201	193.9	191	163		53	71
27	178	22	133	150	187.0	604	359	210	193.4	183	149		44	34
28	179	23	112	170	185.3	597	349	199	191.6	179	137		36	18
29	180	24	138	170	181.3*				187.5*					
30	181	25	148	172	173.1	596		190	179.0	165	136		44	19
MEAN			89.8	100.0	156.9	586	322	168	161.9	149	131		37	20

*Adjusted for burst.
NOTE: Data gaps in AFGL Sagamore Hill data are due to equipment problems.

OBSERVED AND PREDICTED SOLAR ACTIVITY INDICES

	SUNSPOT NUMBERS						2800 MHz FLUX adjusted to 1 AU	
	Rz or R_I		Ra		Rs		Sa	
Date	Monthly Mean	Smoothed	Monthly Mean	Smoothed	Monthly Mean	Smoothed	Monthly Mean	Smoothed
Jul 78	70.4	97	58.1	92	84.2	97	135.2	147
Aug	58.1	104	48.1	98	64.3	104	116.9	153
Sep	138.2	108	128.1	103	110.4	108	159.6	158
Oct	125.1	111	116.0	105	107.7	111	157.1	160
Nov	97.9	113	92.8	107	98.1	113	148.2	162
Dec	122.7	118	121.0	111	121.6	116	170.0	165
Jan 79	166.6	124	164.4	116	150.2	119	196.5	168
Feb	137.5	131	136.8	123	153.0	124	199.1	172
Mar	138.0	136	132.5	128	136.7	128	184.0	176
Apr	101.5	141	95.8	133	127.0	133	175.0	180
May	134.4	147	121.8	139	120.4	139	168.9	186
Jun	149.5	153	136.4	144	138.9	144	186.0	191
Jul	159.4	155	140.5	145	123.1	145	171.4	192
Aug	142.2	155	125.1	144	129.2	145	177.0	192
Sep	188.4	156	184.0	143	156.5	144	202.3	191
Oct	186.2	158	178.2	144	171.7	145	216.4	192
Nov	183.3	162	176.5	149	182.9	149	226.8	196
Dec	176.3	164	157.6	152	151.0	152	197.2	199
Jan 80	159.6	164	145.3	153	153.6	154	199.6	200
Feb	155.0	163	133.9	154	148.7	155	195.1	200
Mar	126.2	161	107.9	153	117.8	153	166.5	200
Apr	164.1	159	138.5	151	164.0	152	209.3	198
May	179.7	156	172.3	149	185.4	151	229.1	197
Jun	157.3	155	153.6	149	153.2	151	199.3	198
Jul	136.3	153*	136.0	144	144.1	151	190.8	197
Aug	135.4	150*	133.0	144	121.9	150	170.3	196
Sep	155.0	150*	150.0	146	138.8	152	185.9	198
Oct	164.7	150*	160.8	149	157.1	154	202.9	200
Nov	147.9	148*	149.9	149	168.5	153	213.4	199
Dec	174.4	142*	167.5	149	174.3	150	218.8	196
Jan 81	114.4†	143(± 7)*	115.4	149	120.5	151	169.0	---
Feb	143.5†	142(± 9)*	143.7	148	153.5	150	199.5	---
Mar	133.8†	139(±10)*	149.2	145	157.5	147	203.2	---
Apr	156.2†	136(±13)*	169.2	142	180.7	143	224.7	---
May	126.0†	134(±15)*	141.3	139	152.8	141	198.9	---
Jun	89.8†	132(±16)*	---	137	112.9	138	161.9	---
Jul	---	130(±17)*	---	135	---	136	---	---
Aug	---	129(±18)*	---	134	---	135	---	---
Sep	---	128(±18)*	---	133	---	134	---	---
Oct	---	126(±19)*	---	131	---	132	---	---
Nov	---	123(±20)*	---	128	---	129	---	---
Dec	---	120(±21)*	---	124	---	125	---	---

*An asterisk denotes either a value of the observed 12-month running mean or the predicted 12-month average that is based on preliminary observations of the Zurich and International relative sunspot numbers (R_Z and R_I). Parentheses enclose the 90% confidence limits. Shaded boxes enclose the most recent smoothed values; boxes not shaded enclose predicted values. Ra is the new symbol for R_A'. All tabulated entries of Ra are final values.

†R_I replaces R_Z as of January 1981.

SMOOTHED OBSERVED AND PREDICTED SUNSPOT NUMBERS
CYCLE 21

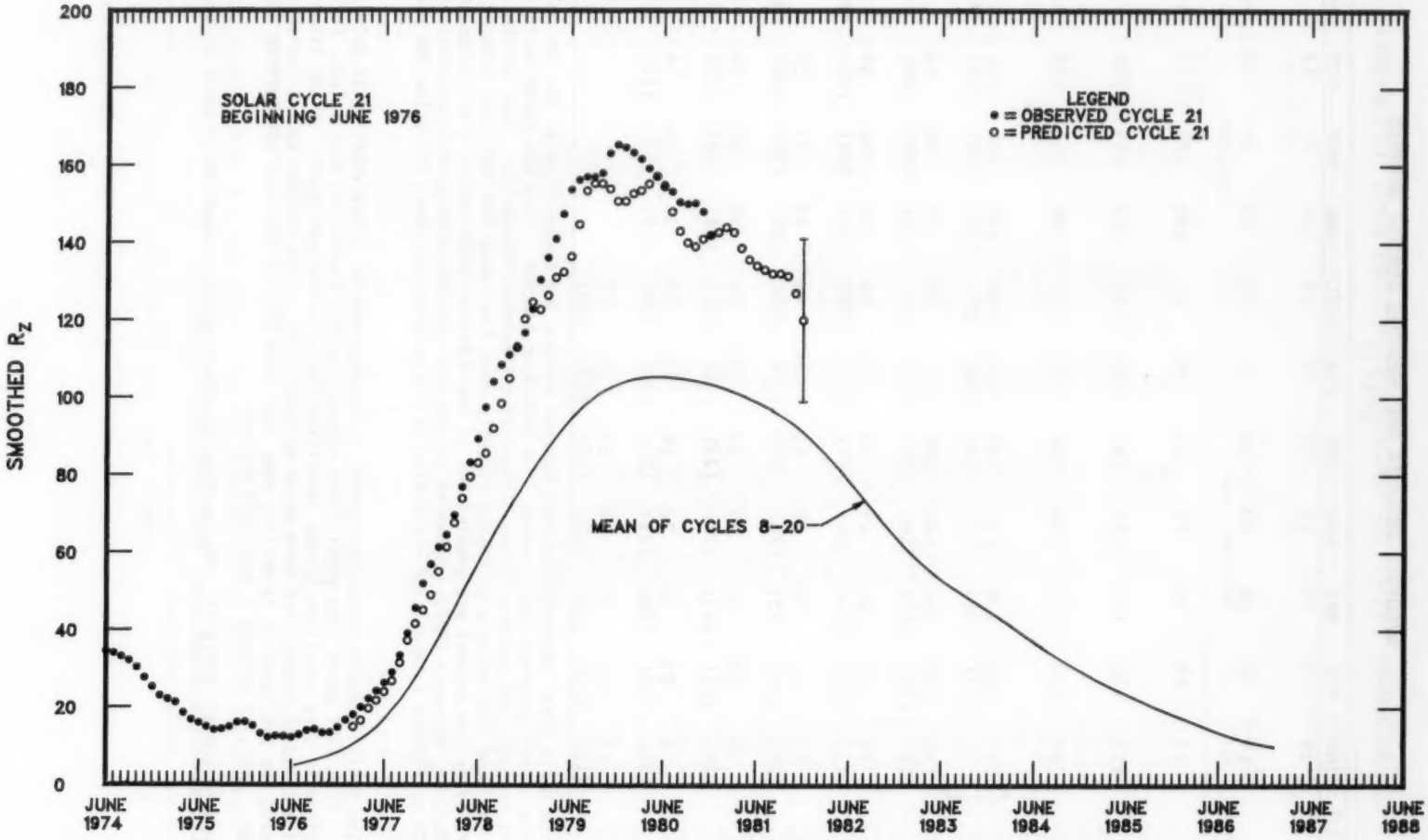
MONTH	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
1976	15	13	12	13	13	12	13	14	14	13	14	15
1977	17	18	20	22	24	26	29	33	39	46	52	57
1978	61	65	70	77	83	89	97	104	108	111	113	118
1979	124	131	137	141	147	153	155	155	156	158	162	165*
1980	164	163	161	159	156	155	153	150	150	150	148	142
1981	143	142	139	136	134	132	130	129	128	126	123	120
	(7)	(9)	(10)	(13)	(15)	(16)	(17)	(18)	(18)	(19)	(20)	(21)
1982	116	113	110	108	105	102	98	94	89	84	81	78
	(19)	(18)	(17)	(16)	(15)	(15)	(14)	(12)	(12)	(10)	(10)	(10)
1983	74	71	69	67	64	62	60	59	58	57	57	56
	(11)	(12)	(14)	(16)	(17)	(19)	(20)	(22)	(23)	(25)	(25)	(26)
1984	55	53	50	47	45	45	44	42	41	39	38	36
	(26)	(26)	(25)	(26)	(27)	(28)	(28)	(28)	(28)	(26)	(25)	(25)
1985	35	34	33	33	32	30	29	28	27	26	25	24
	(25)	(24)	(23)	(23)	(23)	(22)	(21)	(20)	(20)	(21)	(21)	(22)
1986	24	23	22	20	19	17	16	15	14	14	13	13
	(22)	(22)	(22)	(21)	(21)	(20)	(19)	(18)	(17)	(16)	(15)	(13)
1987	13	13	14	14	15	16	17					
	(12)	(11)	(11)	(12)	(13)	(14)	(14)					

The table gives observed *smoothed* sunspot numbers for Cycle 21 up to the one calculated from the latest observed data, marked by a left-hand bracket. They are based on final Zürich numbers through 1980 and provisional International numbers thereafter. Some of these data after the June 1976 value will change slightly when final data for 1981 are included. The numbers after the bracket are predictions by the McNish-Lincoln method (see *Explanation of Data Reports*, February 1981). Shown in parentheses are the corresponding absolute values of the 90% confidence interval, an indication of the uncertainty above and below the predicted number.

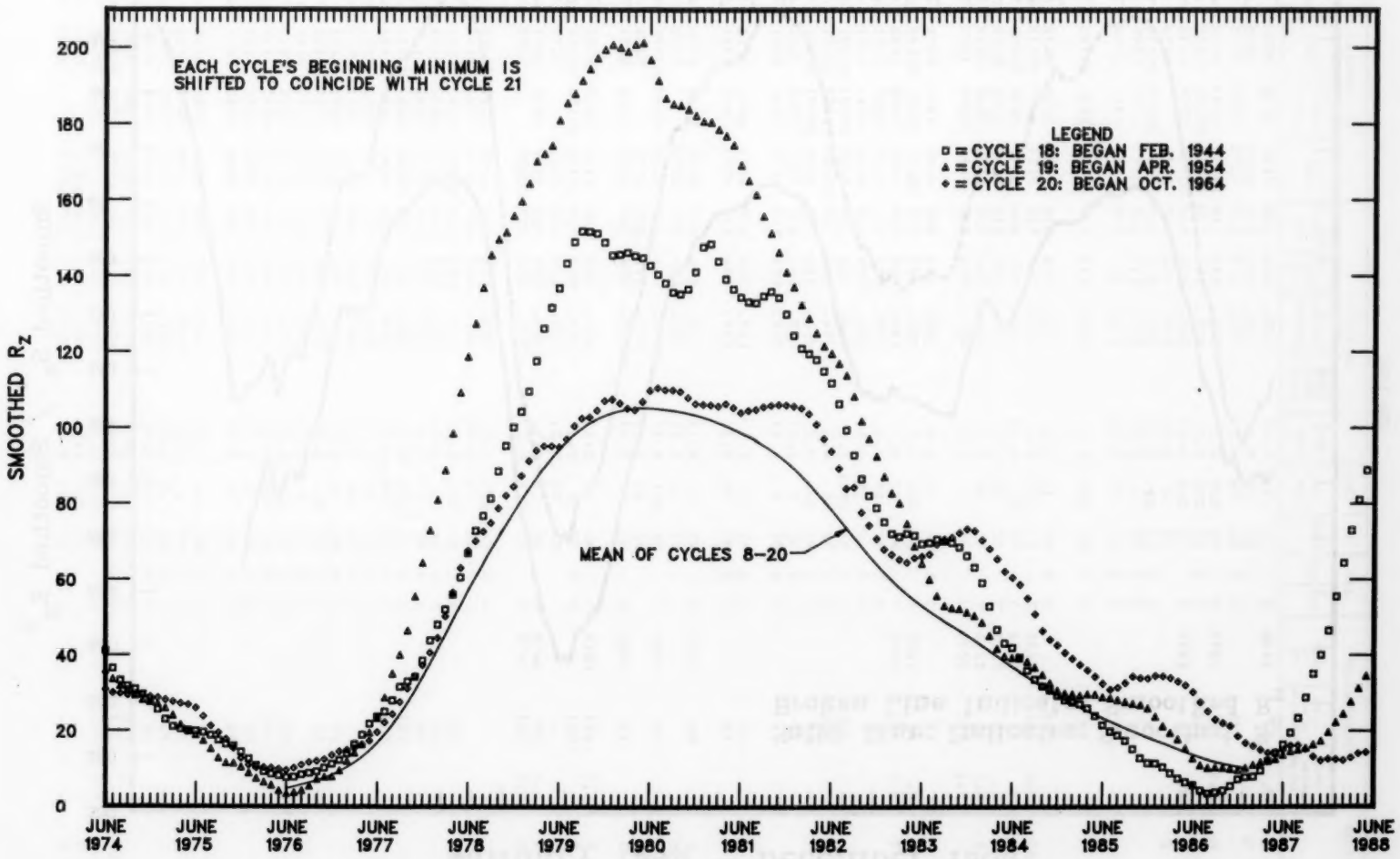
The McNish-Lincoln prediction method is recommended for predictions up to only one year ahead. From that point, the predictions regress rapidly toward the mean value. Furthermore, the method is very sensitive to the identification of a minimum epoch. In SGD issues 390-401, the Cycle 21 predictions were based on March 1976 as the minimum epoch. Later studies, including one published by Waldmeier, show that June 1976 is the more appropriate epoch of minimum. Thus, we adopted a June 1976 minimum.

*MAXIMUM OF SUNSPOT CYCLE 21. The maximum smoothed sunspot number occurred in December 1979.

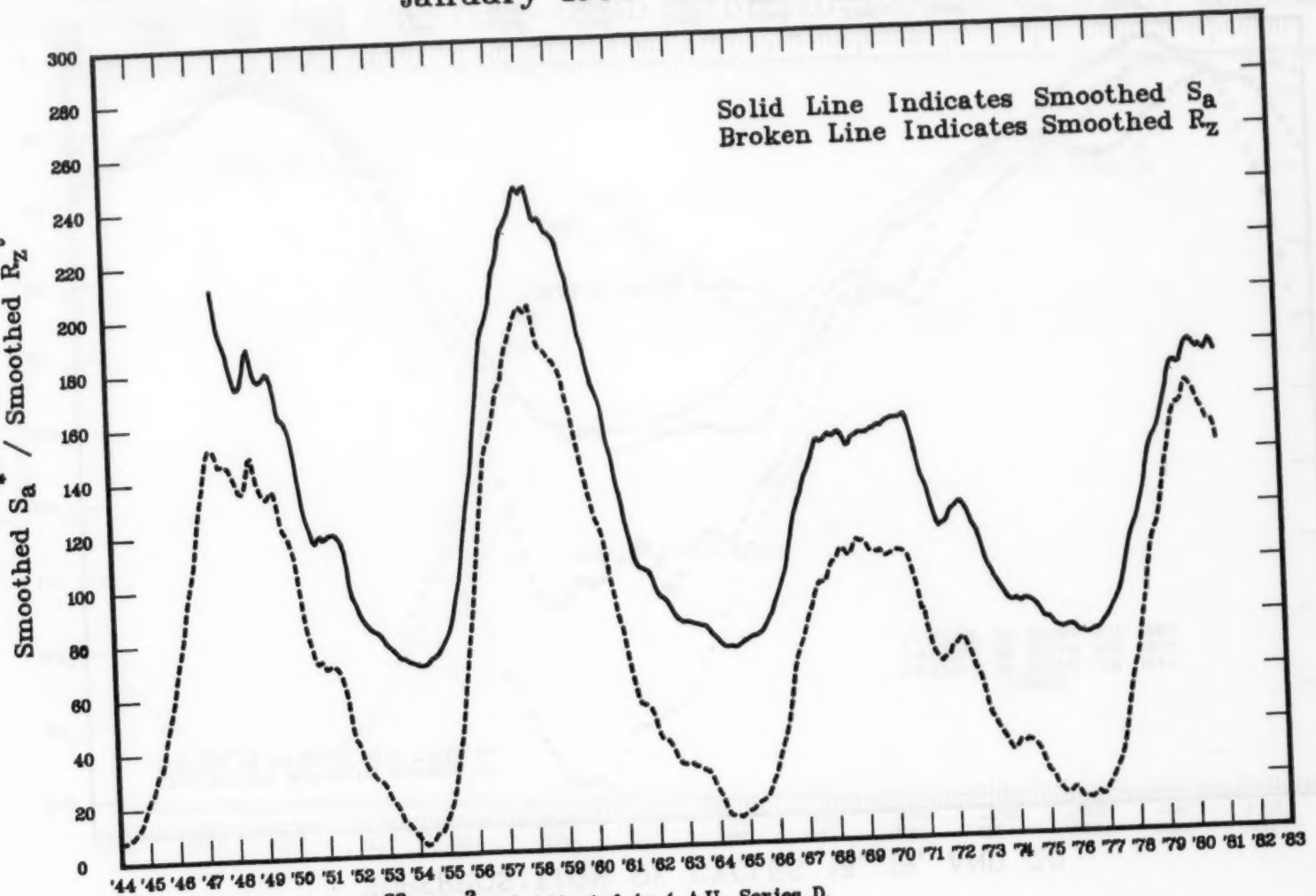
OBSERVED AND ONE-YEAR-AHEAD PREDICTED SMOOTHED SUNSPOT NUMBERS



SUPERPOSITION OF CYCLES 18, 19, AND 20



Superposition of Zürich Sunspot Numbers and Ottawa 10.7 cm Flux
January 1944 – December 1980



* Solar Flux Units (10^{-22} W/m^2 Hz) Adjusted to 1 A.U., Series D.

t Reduced Zürich Sunspot Numbers.

Hα SOLAR FLARES

JUNE 1981

OBSERVATORY	OBSERVED UT				LOCATION					DURATION	IMPORTANCE	OBS.		MEASUREMENTS			REMARKS
	DAY	START	MAX. PHASE	END	APPROX. LAT.	APPROX. MER. DIST.	CENTRAL DISTANCE	HALE PLAGE REGION	CMP. DAY	MIN.		COND.	TYPE	TIME UT	MEAS. AREA Mil. of Disk	CORR. AREA Sq. Deg.	
PEKG	01	0358	0401	0410	N12	W06	.242		31.7	12	SF		C	0401	42	.5	D
ISTA	01	0734		0810	N14	E05	.267		1.7	36	1N						E
LEAR	01	0735	0739	0815	N16	E04	.295		1.6	40	1N	3	C		251		
WEND	01	0735	0740	0806D	N17	E02	.306		1.5	31D	1N		C	0740	206	2.2	H
ATHN	01	0740E	0748U	0750D	N15	E03	.275		1.5	10D	SB	2	C		127		
WEND	01	0748	0753	0802D	S07	W23	.403		30.6	14D	SF		C	0753	42	.5	
ISTA	01	0752		0758	S08	W20	.362		30.8	6	SF						D
ATHN	01	0752E	0755U	0800	S06	W18	.321		31.0	8D	SB	2	C		88		
LEAR	01	0752	0753	0756	S05	W18	.317		31.0	4	SF	3	C		39		
HOLL	01	1310	1310	1335	N03	W61	.875		28.0	25	SN	3	C		85		
HOLL	02	2015E	2019	2025	N20	W12	.402		1.9	10D	SN	4	C		50		
LEAR	03	0144	0145	0205	N16	W19	.422		1.6	21	SN	3	C		197		
PEKG	03	0145E	0146	0210	N17	W21	.455		1.5	25D	1B		C	0146	429	4.9	FH
PEKG	03	0200E	0200	0205	N08	W36	.600		31.4	5D	SF		C	0200	38	.5	DH
PEKG	03	0310	0312	0325	N16	W20	.434		1.6	15	SF		C	0313	25	.3	D
PEKG	03	0405	0409	0436	N17	W22	.467		1.5	31	SF		P	0410	84	1.0	E
WEND	03	0551	0555	0559	N19	E49	.786		5.9	8	SF		C	0555	100	1.7	
LEAR	04	0725	0727	0806	S08	E56	.832		8.5	41	SN	3	C		30		
PEKG	04	0838E	0838E	0848D	S07	E55	.822		8.5	10D	SB		P	0847	34	.6	D
PEKG	04	0845	0847	0904	N15	W37	.638		1.6	19	SN		P	0847	126	1.7	F
LEAR	04	0848	0854	0906	N13	W33	.578		1.9	18	SF	3	C		55		
HOLL	04	1812	1828	1834	S07	W72	.952		30.4	22	SF	3	C				
HOLL	04	1902E	1927U	2045	N21	W15	.437		3.7	103D	1F	2	C		344		
HOLL	04	1902E	1910U	1911D	N22	W18	.476		3.4	9D	1F	3	C		352		
PALE	04	1924E	1925U	2018	N20	W16	.433		3.6	54D	SF	3	C		90		
HOLL	04	2025	2028	2033	N14	E68	.932		10.0	8	SF	2	C		41		
PALE	04	2225	2229	2233	N18	E68	.935		10.0	8	SF	3	C		14		
HOLL	05	1333	1336	1340	N12	W45	.723		2.2	7	SF	3	C		18		
HOLL	05	1443	1453	1526	N12	W54	.819		1.6	43	SF	3	C		87		
PEKG	06	0600	0602	0609	S08	W73	.957		31.8	9	SN		P	0602	29		D
ISTA	06	0620		0650	S08	W73	.357		31.8	30	SN						BEG
PEKG	06	0625E	0625	0638	S08	W73	.957		31.8	13D	SF		P	0625	25		E
ISTA	06	0702		0721	S08	W73	.957		31.8	19	SN						BEG
PEKG	06	0842	0849	0855	S07	W76	.971		31.7	13	SN		P	0849	21		D
PEKG	08	0308	0309	0315	N03	E52	.794		12.0	7	1N		P	0309	130	2.2	F
LEAR	08	0310E	0311U	0319D	N07	E50	.770		11.9	9D	SF	2	C		130		
ISTA	08	0723		0825	N09	E56	.833		12.5	62	1B						E
PEKG	08	0740	0745	0821	N09	E53	.804		12.3	41	SB		P	0746	92	1.6	F
BUCA	08	0741		0900D	N08	E57	.842		12.6	73D	SN		C	0741	187	2.0	E
ATHN	09	0915E	0920	0940	S10	E09	.236		10.1	25D	1B	3	C				
HOLL	09	1434	1445	1501	S24	E80	.988		15.6	27	SN	3	C				
HOLL	09	1437	1437	1454D	N12	E39	.649		12.5	17D	SB	2	C		159		D
HOLL	09	1505	1508	1512	N12	E37	.623		12.4	7	SF	3	C		20		
HOLL	09	1618	1620	1624	S06	W17	.311		8.4	6	SF	4	C		26		
PALE	09	1826E	1840	1853D	N12	E28	.502		11.9	27D	SN	3	C		120		
HOLL	09	1827	1840	1854	N10	E30	.521		12.0	27	SB	3	C		123		
HOLL	09	1833	1842	1847	S22	E73	.963		15.2	14	SF	2	C				
HOLL	09	1859	1937	1943	S26	E80	.988		15.8	44	SF	3	C				
HOLL	09	1948	1959	2012	N11	E29	.511		12.0	24	SB	3	C		74		
PALE	09	2003E	2006U	2011	N12	E28	.502		11.9	8D	SF	3	C		22		
HOLL	09	2036	2038	2045	S25	E75	.973		15.5	9	SF	3	C				
HOLL	09	2100	2106	2132	N11	E28	.497		12.0	32	SN	3	C		139		
PALE	09	2102	2106U	2132D	N11	E26	.469		11.8	30D	1N	3	C		194		
HOLL	09	2207	2220	2228	S21	E69	.943		15.1	21	SN	3	C		43		
HOLL	09	2309	2350	0032	S21	E68	.938		15.1	83	SN	3	C		39		
HOLL	10	0042	0043	0056	S25	E72	.961		15.4	14	SN	3	C				
LEAR	10	0043	0044	0051	S21	E70	.948		15.3	8	SF	3	C		27		
LEAR	10	0511	0513	0525	N10	E24	.434		12.0	14	SN	3	C		69		
LEAR	10	0554	0606	0648	S27	E50	.822		14.0	54	SN	3	C		31		
LEAR	10	0622	0624	0708	N13	E24	.453		12.1	46	1B	3	C		325		
ATHN	10	0625E	0629	0653	N10	E24	.434		12.1	28D	SB	3	C		127		D
BUCA	10	0628E	0630	0700	N12	E22	.418		11.9	62D	1N		C	0730	215	2.5	
ISTA	10	0645		0705D	N13	E25	.466		12.2	20D	1N						E
ISTA	10	0650		0705D	S26	E50	.818		14.0	15D	1N						E

* Solar Flux Units (10 ... 2.8 GHz)
† Reduced Zürich Sunspot Numbers

Hα SOLAR FLARES

JUNE 1981

OBSERV-ATORY	OBSERVED UT				LOCATION					DURA-TION	IM-POR-TANCE	OBS.		MEASUREMENTS			REMARKS
	DAY	START	MAX. PHASE	END	APPROX. LAT.	APPROX. MER. DIST.	CENTRAL DISTANCE	HALE PLAGE REGION	CMP. DAY	MIN.		COND.	TYPE	TIME UT	MEAS. AREA Mill. of Disk	CORR. AREA Sq. Deg.	
LEAR	10	0726	0726	0732	N14	E25	.473		12.2	6	SF	3	C		48		
LEAR	10	0902	0911	0916D	S26	E67	.937		15.4	140	SF	3	C		93		
ATHN	10	1118	1120	1142	S21	E63	.907		15.2	24	SB	3	C		111		
RAMY	10	1124	1124	1149	S22	E52	.823		14.4	25	SF	3	C		46		
HOLL	10	1554	1605	1617	S26	E44	.765		14.0	23	SF	3	C		69		
HOLL	10	2309	2350	0032	S21	E68	.938		16.1	83	SN	3	C		39		
PEKG	10	2314E	2314	2314D	S26	E41	.738		14.0		SN		P	2314	55	.8	E
PEKG	11	0016	0016	0019	S23	E85	.397		17.4	3	SF		P	0016	13		E
PEKG	11	0040	0042	0047	N12	W09	.251		18.4	7	SF		C	0043	34	.4	E
PEKG	11	0100	0104	0110D	S26	E41	.738		14.1	130	SN		P	0104	92	1.4	E
PEKG	11	0320	0323	0328	S22	E74	.968		16.7	8	SN		P	0323	42	1.7	D
PEKG	11	0337	0340	0344	S07	W37	.611		8.4	7	SN		P	0340	42	.6	D
LEAR	11	0344E	0344U	0444	S07	W38	.625		8.3	60D	SF	3	C		43		
WEND	11	0919	0924	0934	S08	W41	.666		8.3	15	SF		C	0924	38	.5	
WEND	11	1256	1259	1307D	S22	E70	.950		16.8	11D	SF		C	1259	62		
RAMY	11	1326	1331	1334	N13	E14	.320		12.6	8	SF	3	C		22		
WEND	11	1510	1520	1530	S21	E69	.944		15.8	20	SF		C	1520	72		
RAMY	11	1902	1924	2017D	S25	E67	.937		16.8	75D	1F	3	C		124		
HOLL	11	1905	1915	2106D	S23	E64	.917		16.6	121D	1N	3	C		135		
HOLL	12	0013	0014	0015D	S25	E28	.606		14.1	2D	1B	3	C		191		
PEKG	12	0015E	0015	0040	S25	E28	.606		14.1	25D	1B		P	0016	290	3.7	F
PALE	12	0015E	0016U	0023D	S24	E28	.597		14.1	8D	1N	3	C		184		
PEKG	12	0459	0509	0522	S26	E25	.587		14.1	23	SN		C	0508	76	1.0	E
PEKG	12	0511	0515	0520	N12	E14	.308		13.3	9	SF		C	0514	29	.3	E
WEND	12	0535	0537	0546	N10	E02	.166		12.4	11	SF		C	0537	23	.2	
WEND	12	1057E	1100	1110	N09	W01	.146		12.4	13D	SN		C	1100	84	.9	
HOLL	12	1402	1436	1459	N09	W04	.161		12.3	57	SF	3	C		39		
HOLL	12	1759	1800	1831	N09	W06	.178		12.3	32	SF	3	C		113		
PALE	12	2209E	2213U	2215D	S25	E32	.645		15.3	6D	SF	3	C		43		
PEKG	12	2310	2311	2313	N08	E67	.321		18.0	3	SN		P	2311	25		D
PEKG	12	2316	2317	2313	S26	E32	.653		15.4	3	SF		C	2317	58	.7	E
PEKG	12	2335	2337	2340	N09	W09	.212		12.3	5	SF		C	2338	168	1.8	F
PEKG	12	2336	2337	2348	N07	E67	.921		18.0	12	SF		P	2338	25		F
PEKG	12	2338	2339	2342	N16	W35	.613		10.4	4	SF		P	2339	21	.3	D
PEKG	12	2342	2348	2358	S23	E34	.651		15.5	16	SN		C	2349	55	.7	EH
LEAR	13	0527	0529	0533	S24	E28	.598		15.3	6	SF	3	C		50		
PEKG	13	0528E	0529	0535	S26	E30	.635		15.5	7D	SF		P	0530	38	.5	E
LEAR	13	0608	0609	0623	S25	E09	.457		13.9	15	SF	3	C		45		
BUCA	13	0655		0730	S22	E31	.613		15.6	35	SN		C	0711	107	1.4	
PEKG	13	0655	0711	0752	S22	E30	.603		15.5	57	SN		P	0711	72	1.5	F
LEAR	13	0659	0706	0759	S23	E30	.611		15.5	60	SN	3	C		97		
LEAR	13	0832	0840	0904	S10	W67	.924		8.3	32	SN	3	C		52		
UPIC	13	0835	0840	0856	S07	W69	.935		8.2	21	1F		P	0840	102	2.8	
PEKG	13	0836E	0842	0858	S08	W69	.936		8.2	22D	SN		P	0842	50		D
RAMY	13	1346	1405	1432	N08	E58	.850		17.9	46	SF	3	C		43		
RAMY	13	1454	1457	1502	N07	E55	.821		17.7	8	SN	3	C		18		
HOLL	13	1455	1456	1506	N05	E56	.830		17.8	11	SN	3	C		24		
HOLL	13	1548	1557	1626	N14	E00	.229		13.7	38	SN	3	C		175		
HOLL	13	1723	1727	1738	N15	W06	.266		13.3	15	SF	3	C		38		
HOLL	13	1742	1749	1755	N12	W19	.374		12.3	13	SF	3	C		73		
HOLL	13	1758	1812	1823	S25	E26	.588		15.7	25	SF	3	C		81		
HOLL	13	1854	1854	1304	S20	E60	.885		18.3	10	SN	3	C		35		
HOLL	13	2023	2025	2031	S26	E04	.455		14.1	8	SF	3	C		28		
PALE	13	2023	2023	2032	S25	E05	.442		14.2	9	SF	3	C		21		
PEKG	13	2240	2242	2250	S24	E37	.690		16.7	10	SN		P	2242	63	.9	E
PEKG	13	2310	2314	2318	N14	W09	.275		13.3	8	SN		P	2314	50	.5	E
PEKG	14	0007	0010	0015	S24	W03	.423		13.8	8	SF		C	0009	29	.3	E
PEKG	14	0129	0131	0139	N08	E52	.791		18.0	10	SN		C	0131	29	.5	E
PEKG	14	0339	0341	0346	S24	W06	.431		13.7	7	SN		C	0340	21	.2	D
LEAR	14	0412	0417	0429	N06	E48	.745		17.8	17	SF	3	C		46		
PEKG	14	0415	0417	0423	N08	E51	.780		18.0	8	SN		C	0417	84	1.4	D
LEAR	14	0900	0903	0914	S25	W07	.450		13.9	14	SF	3	C		22		
WEND	14	1333	1338	1346	S24	W11	.455		13.7	13	SF		C	1338	40	.5	E
HOLL	14	1502	1507	1513	S25	W10	.464		13.9	11	SN	3	C		31		
HOLL	14	1512	1519	1522	S25	E30	.628		15.9	10	SF	3	C		23		
HOLL	14	1703	1704	1712	N13	W26	.477		12.8	9	SF	3	C		26		
HOLL	14	1712	1720	1731	N07	W24	.418		12.9	19	SF	3	C		31		
HOLL	14	1749	1821	1916	N12	W20	.387		13.2	87	1N	3	C		211		

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OBSERVATORY	OBSERVED UT				LOCATION					DURATION — MIN.	IMPORTANCE	OBS.		MEASUREMENTS			REMARKS
	DAY	START	MAX. PHASE	END	APPROX. LAT.	APPROX. MER. DIST.	CENTRAL DISTANCE	HALE PLAGE REGION	CMP. DAY			COND.	TYPE	TIME — UT	MEAS. AREA Mil. of Disk	CORR. AREA Sq. Deg.	
HOLL	14	1754	1755	1802	S25	E28	.608		16.8	8	SF	3	C		37		
PALE	14	1818	1822	1943	N08	W22	.391		13.1	85	SF	3	C		126		
WEND	14	1820E		1836	N12	W20	.387		13.3	16D	SN		V	1824	100	1.1	
HOLL	14	2042	2043	2047	S25	E31	.638		17.2	5	SF	3	C		36		
PALE	14	2053	2053	2058	N14	W21	.416		13.3	5	SF	3	C		25		
PALE	14	2200	2202	2224	S25	W12	.475		14.0	24	SF	3	C		47		
HOLL	14	2200	2202	2222	S24	W13	.468		13.9	22	SN	3	C		55		
LEAR	14	2334E	2340	0032	N12	W24	.443		13.2	58D	1N	3	C		331		
LEAR	15	0207	0207	0215	N13	W24	.448		13.3	8	SF	3	C		26		
LEAR	15	0732	0735	0753	S21	E39	.695		18.2	21	SF	3	C		30		
ISTA	15	0734		0805D	S22	E39	.700		18.2	31D	1F						E
HOLL	15	1429	1431	1438	N11	W44	.705		12.3	9	SF	3	C		36		
HOLL	15	1500	1508	1516	S20	E35	.646		18.3	16	SF	3	C		25		
HOLL	15	1611	1612	1638	N03	E30	.514		17.9	27	SF	3	C		38		
HOLL	15	1620	1628	1639	N11	W34	.577		13.1	19	SF	3	C		38		
HOLL	15	1622	1623	1657	S21	E33	.630		18.2	35	SF	3	C		30		
RAMY	15	1624	1629	1633	N12	W30	.526		13.4	9	SF	3	C		21		
HOLL	15	1822	1826	1836	N06	E29	.490		17.9	14	SF	3	C		30		
HOLL	15	2329	2340	0023	N12	W25	.456		14.1	54	1N	3	C		354		
PALE	16	0215	0226U	0251	S21	E43	.737		19.3	36	SF	3	C		134		
LEAR	16	0224	0227	0256	S20	E28	.568		18.2	32	SN	3	C		139		
LEAR	16	0644	0644	0643	S23	E12	.451		17.2	5	SF	3	C		24		
ISTA	16	0742		0815	S25	W33	.660		13.8	33	1N						E
LEAR	16	0745	0747	0851	S25	W32	.650		13.9	66	1B	3	C		280		
ATHN	16	0746	0748	0809	S25	W30	.630		14.1	23	SB	3	C		254		
LEAR	16	0754	0755	0807	N16	W42	.694		13.2	13	SF	3	C		28		
LEAR	16	0813	0814	0820	S20	E25	.535		18.2	7	SN	3	C		42		
RAMY	16	1311	1333	1354	S25	W36	.689		13.8	43	SF	3	C		24		
HOLL	16	1609	1611	1624	N15	W63	.896		11.9	15	SF	3	C		28		
HOLL	16	1623	1625	1643	S25	W26	.592		14.7	20	SF	3	C		73		
HOLL	16	1651	1714	1717	N18	W64	.906		11.9	26	SF	3	C		44		
HOLL	16	1755	1755	1810	S26	W40	.733		13.7	15	SF	3	C		18		
HOLL	16	1820	1820	1828	S25	W27	.601		14.7	8	SF	3	C		21		
HOLL	16	1922	1930	1938	S21	E19	.483		18.2	16	SF	3	C		24		
HOLL	16	1956	1958	2021	N07	W49	.757		13.2	25	1N	3	C		211		
HOLL	16	2026	2027	2040	S27	W40	.739		13.9	14	SB	3	C		18		
HOLL	16	2325	2332	2342	S26	W45	.779		13.6	17	SF	3	C		33		
LEAR	17	0003	0004	0023	S26	W42	.753		13.9	20	SB	3	C		98		D
HOLL	17	0003	0004	0005D	S27	W44	.776		13.7	20	SB	3	C		130		
HOLL	17	0003	0004	0048	S27	W44	.776		13.7	45	SB	3	C		130		D
HOLL	17	0004	0005	0039	S21	E17	.466		18.3	35	SF	3	C		40		
LEAR	17	0131	0133	0146	S22	E15	.461		18.2	15	SB	3	C		146		
HOLL	17	0133	0133	0145	S23	E15	.474		18.2	12	SB	3	C		69		D
LEAR	17	0251	0253	0305	S20	E13	.419		18.1	14	SN	3	C		98		
LEAR	17	0321	0324	0332	S25	W45	.775		13.8	11	SN	3	C		48		
LEAR	17	0411	0430	0524	S26	W18	.534		15.8	73	SF	3	C		58		
PEKG	17	0516E	0537	0606	N16	W59	.866		12.8	50D	SF		C	0537	29	.6	DHK
LEAR	17	0532	0537	0548	S20	E11	.404		18.1	16	SN	3	C		128		
PEKG	17	0534	0537	0543	S19	E12	.397		18.1	9	1B		C	0537	231	2.6	F
PEKG	17	0631	0636	0646	N16	W59	.866		12.8	15	SF		C	0636	29	.6	DHK
PEKG	17	0752	0753	0755	S19	E10	.383		18.1	3	SN		P	0753	84	.9	E
ATHN	17	0951	0954	1013	S23	W21	.526		15.8	28	SF	3	C		64		
PEKG	17	0952E	0953	1020D	S19	E10	.383		18.2	28D	SN		P	0956	84	.9	FK
PEKG	17	0952E	0954	0959	S23	W47	.785		13.9	7D	SN		P	0956	84	1.4	F
PEKG	17	0952E	0958	1020D	S19	E10	.383		18.2	28D	SN		P	0958	126	1.4	F
PEKG	17	0952E	0954	1005	S23	W21	.526		15.8	13D	SN		P	0956	101	1.2	F
ATHN	17	0954	1003	1026	S21	E14	.440		18.5	32	SB	3	C		127		
HOLL	17	1609	1611	1624	N15	W63	.896		12.9	15	SF	3	C		28		
HOLL	17	1623	1625	1643	S25	W26	.593		15.7	20	SF	3	C		73		
HOLL	17	1651	1714	1717	N18	W64	.906		12.9	26	SF	3	C		44		
HOLL	17	1820	1820	1828	S25	W27	.602		15.7	8	SF	3	C		21		
PALE	17	2247	2255U	2309	S20	E03	.365		18.2	22	SF	3	C		75		
PALE	17	2248	2253	2312	S27	W52	.843		14.1	24	SF	3	C		74		
HOLL	18	0112	0118	0136	S24	W31	.634		15.7	24	SN	2	C		115		
PALE	18	0112	0113	0132	S25	W30	.632		15.8	20	SF	3	C		66		
PALE	18	0157	0200U	0205D	S25	W52	.837		14.2	8D	SF	3	C		51		
PALE	18	0216E	0218U	0248	N12	W67	.922		13.1	30D	1F	3	C		129		
PALE	18	0239	0245U	0249	S25	W52	.837		14.2	10	SF	3	C		21		

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OBSERV-ATORY	OBSERVED UT				LOCATION					DURA-TION	IM-POR-TANCE	OBS.		MEASUREMENTS			REMARKS
	DAY	START	MAX. PHASE	END	APPROX. LAT.	APPROX. MER. DIST.	CENTRAL DISTANCE	HALE PLAGE REGION	CMP. DAY	MIN.		CONO.	TYPE	TIME — UT	MEAS. AREA Mil. of Disk	CORR. AREA Sq. Deg.	
PALE	18	0402E	0403U	0408	N12	W68	.929		13.1	6D	SF	2	C		23		
ISTA	18	0602		0640	N06	W04	.107		18.0	38	1N						E
ATHN	18	0923	0929	1313	S33	W29	.693		16.2	230	SN	4	C		127		
RAMY	18	1105	1117	1208	S26	W35	.688		15.8	63	1F	3	C		194		
RAMY	18	1226	1226	1236	N14	W71	.347		13.2	10	SF	3	C		20		
HOLL	18	1508	1537	1553	S20	W06	.377		18.2	51	SF	3	C		119		
HOLL	18	1914	1914	1919	S29	E37	.727		21.6	5	SF	3	C		34		
HOLL	18	2036	2039	2056	S22	W09	.422		18.2	20	SF	3	C		38		
HOLL	19	0046	0051	0128	S23	W09	.438		18.4	42	SF	3	C		83		
HOLL	19	0850	0850	0112	S25	W48	.803		15.4	22	SF	3	C		23		
ISTA	19	0630		0655	N26	E90	1.000		26.0	25	1N						D
PALE	20	0046	0058	0138	N15	E73	.957		25.5	44	SF	3	C				
LEAR	20	0303	0313	0332	N13	E72	.952		25.5	23	SF	3	C				
HOLL	20	1648	1651	1705	N13	E67	.922		25.7	17	SF	3	C		18		
RAMY	20	1700	1707	1758	N14	E64	.902		25.5	58	SF	3	C		73		
HOLL	20	1807	1816	1913	N13	E66	.915		25.7	66	SF	3	C		48		
HOLL	20	2216	2220	2253	N06	W41	.658		17.9	37	SN	3	C		141		
PALE	20	2218	2221	2248	N06	W39	.631		18.0	30	SF	3	C		82		
PALE	20	2230	2235	2247	N15	E63	.895		25.7	17	SF	3	C		27		
HOLL	20	2241	2254	2334	S20	W38	.683		18.1	53	SF	3	C		52		
PALE	20	2242	2257	2315	S21	W37	.678		18.2	33	SF	3	C		50		
PEKG	21	0038	0048U	01230	N16	E62	.888		25.7	450	SN		C	0048	63	1.4	E
HOLL	21	0040	0047	0101	N13	E67	.922		26.1	21	SN	3	C		29		
LEAR	21	0040	0046	0058	S11	E75	.969		26.7	18	SF	3	C				
HOLL	21	0040	0040	0109	S13	E82	.992		27.2	29	SF	3	C				
LEAR	21	0042	0045	0055	N13	E60	.870		25.5	13	SF	3	C		33		
PALE	21	0044E	0045	0107	N15	E62	.887		25.7	230	SF	3	C		86		
PALE	21	0149	0150	0158	N15	E62	.887		25.7	9	SF	3	C		34		
LEAR	21	0225	0227	0251	S20	W38	.683		18.3	26	SF	3	C		64		
PALE	21	0226	0226	0253	S22	W36	.674		18.4	27	SF	3	C		27		
PALE	21	0328	0331	0337	N15	E60	.871		25.6	9	SF	3	C		30		
RAMY	21	1331	1342	1503	N16	E55	.829		25.7	92	SF	3	C		111		
RAMY	21	1405	1407	1420	S22	W50	.811		17.8	15	SF	3	C		17		
RAMY	21	1431	1447	1503	N06	W51	.778		17.8	32	SF	3	C		89		
HOLL	21	1435	1445	1453	N08	W50	.768		17.9	24	SF	3	C		25		
RAMY	21	1435	1444	1451	S22	W50	.811		17.9	16	SN	3	C		53		
HOLL	21	1444	1444	1454	S21	W50	.808		17.9	10	SF	3	C		61		
HOLL	21	1455	1500	1509	S19	W45	.753		18.2	14	SF	3	C		48		
RAMY	21	1504	1528	1604	S13	E41	.685		24.7	60	SF	3	C		91		
RAMY	21	1553	1557	1605	S20	W44	.746		18.4	12	SF	3	C		21		
HOLL	21	1721	1723	1738	S21	W51	.817		17.9	17	SF	3	C		24		
HOLL	21	1749	1749	1757	N14	E53	.807		25.7	8	SF	3	C		15		
PALE	21	2059	2105	2113	N13	E52	.795		25.8	14	SF	3	C		36		D
PALE	21	2125	2125	2134	S20	W43	.735		18.2	9	SF	3	C		47		
PALE	21	2201	2203	2217	N13	E51	.785		25.7	16	SF	3	C		42		
PALE	22	0127	0135	0209	N18	E47	.753		25.6	42	SF	3	C		75		
LEAR	22	0129E	0142U	0159	N17	E47	.750		25.6	300	SF	3	C		39		
PEKG	22	0643	0645	0650	S15	E54	.829		26.3	7	SF		P	0645	8	.1	D
PEKG	22	0645E	0700	0730	N21	E90	1.000		29.0	450	B		P				A
PEKG	22	0900	0910	0935	N24	E90	1.000		29.1	35	B		P				A
PEKG	22	1040	1045	1120	N13	E47	.741		26.0	40	1N		C	1045	189	2.8	F
HOLL	22	1359	1400	1407	N19	E42	.702		25.7	8	SF	3	C		43		
HOLL	22	1438	1440	1446	S07	E68	.930		27.7	8	SF	3	C		15		
HOLL	22	1441	1457	1709	N15	E42	.688		25.8	148	SB	3	C		160		D
HOLL	22	2055	2056	2127	N14	E38	.636		25.7	32	SB	3	C		124		D
PEKG	22	2307	2309	2314	S14	E44	.724		26.3	7	SN		P	2310	67	1.0	F
PEKG	23	0043	0045	00450	N14	E32	.557		25.4	20	SF		P	0045	13	.2	D
PEKG	23	0215	0216	0219	N14	E32	.557		25.5	4	SF		P	0216	25	.3	E
PEKG	23	0323	0324	0330	S19	W67	.934		18.1	7	SN		P	0325	38		D
PEKG	23	0335	0337	0342	N14	E31	.543		25.5	7	SN		P	0339	17	.2	D
PEKG	23	0458	0500	0505D	N14	E30	.530		25.5	70	SN		C	0501	42	.5	DT
PEKG	23	0602	0605	0609	N13	E33	.595		25.7	7	SF		C	0605	50	.6	E
PEKG	23	0701	0702	0710	N15	E32	.562		25.7	9	SN		P	0702	46	.5	E
PEKG	23	0750E	0752	0754	N14	E28	.503		25.4	40	SN		P	0752	42	.5	D
PEKG	23	0809E	0811	0811D	N14	E31	.543		25.7	20	SN		P	0811	126	1.5	EK
PEKG	23	0814E	0814	0825	N14	E31	.543		25.7	110	SN		C	0815	155	1.9	E
PEKG	23	0902E	0908	09200	N16	E30	.541		25.6	180	SN		P	0909	139	1.7	E

Hα SOLAR FLARES

JUNE 1981

OBSERV-ATORY	OBSERVED UT				LOCATION					DURA-TION	IM-POR-TANCE	OBS.		MEASUREMENTS			REMARKS
	DAY	START	MAX. PHASE	END	APPROX. LAT.	APPROX. LON. DIST.	CENTRAL DISTANCE	HALE PLAGE REGION	CMP. DAY	MIN.		CONF.	TYPE	TIME UT	MEAS. AREA Mill. of Disk	CORR. AREA Sq. Deg.	
PEKG	23	0931	0933	0937D	N15	E31	.548		25.7	6D	SN		P	0933	84	1.0	E
ATHN	23	1109E	1110	1151	N13	E31	.539		25.8	42D	1N	2	C		206		
HOLL	23	1655	1720	1855	N13	E26	.470		25.7	120	SB	3	C		80		
PALE	23	1713E	1731U	1916D	N14	E25	.462		25.6	123D	SN	3	C		110		
HOLL	23	1819	1819	1834	N19	E79	.982		29.7	15	SF	3	C				
HOLL	23	1857	1859	1912	N15	E26	.482		25.7	15	SN	3	C		57		
HOLL	23	1926	1935	2002	N19	E78	.978		29.7	36	SN	3	C				
PALE	23	1930E	1935U	1940	N21	E75	.967		29.4	10D	SF	3	C				
HOLL	23	1943	1944	1959	S22	W70	.953		18.6	16	SF	3	C				
PALE	23	1944	1948U	1954	S23	W71	.958		18.5	10	SF	3	C				
HOLL	23	2046	2056	2113	N20	E77	.975		29.6	27	SN	3	C				
HOLL	23	2240	2241	2301D	N13	E23	.428		25.7	21D	SN	3	C		65		
HOLL	23	2253	2254	2301D	S07	E47	.740		27.5	8D	SF	3	C		25		
MANI	23	2343E	2345U	2355D	N18	E78	.978		29.8	12D	SN	1	V				
PEKG	24	0036	0038U	0050D	N15	E18	.374		25.4	14D	1N		C	0045	231	2.6	F
MANI	24	0042	0048	0054	N14	E23	.433		25.8	12	SB	1	V		150	1.7	F
PEKG	24	0148	0202U	0214D	N15	E18	.374		25.4	26D	1B		C	0202	256	2.8	F
MANI	24	0204E	0205	0213D	N15	E20	.400		25.6	9D	SN	1	V		58	.6	F
PEKG	24	0436	0438	0446	N20	E74	.363		29.7	10	1B		C	0439	84		E
PEKG	24	0448	0450	0454	N18	E19	.415		25.6	6	SN		C	0450	59	.6	E
PEKG	24	0508	0513	0520	N15	E22	.427		25.9	12	SF		C	0513	21	.2	D
PEKG	24	0547	0555	0612	N15	E15	.336		25.4	25	SB		C	0555	63	.7	D
PEKG	24	0622	0638	0650	N15	E15	.336		25.4	28	1B		C	0639	442	4.8	F
BUCA	24	0625	0634	0700	N16	E14	.336		25.3	35	1N		C	0634	430	4.7	
PEKG	24	0633	0638	0650	N20	E74	.963		29.8	17	1B		C	0639	84		E
ATHN	24	0635	0636	0652	N13	E16	.330		25.5	17	SB	3	C		111		
ATHN	24	0635	0636	0652	N14	E74	.961		29.8	17	SB	3	C				
ISTA	24	0700		0720	N27	W02	.423		24.1	20	SN						D
ISTA	24	0705		0753	N12	E19	.363		25.7	48	SN						E
PEKG	24	0735	0740	0743	N13	E15	.316		25.4	8	SN		C	0740	134	1.5	D
ISTA	24	0741		0750	N16	E14	.336		25.4	9	1B						CD
RAMY	24	1120E	1120U	1158	N21	E83	.992		30.7	38D	SN	3	C				
RAMY	24	1125	1143	1145D	N14	E11	.278		25.3	20D	SB	3	C		72		D
RAMY	24	1359	1527	1529D	N18	E68	.930		29.7	93D	1N	3	C		172		
HOLL	24	1417	1542	1553D	N18	E72	.952		30.0	96D	1N	3	C		113		
HOLL	24	1504	1526	1528D	N14	E09	.257		25.3	24D	SB	3	C		125		
RAMY	24	1511	1516	1525	N15	E03	.270		25.3	14	SB	3	C		103		D
HOLL	24	1709	1731	1805	N14	E08	.247		25.3	56	SB	3	C		143		
PALE	24	1757E	1812U	1836	N14	E07	.239		25.3	39D	SF	3	C		30		D
PALE	24	1806	1814	1841	S28	W44	.786		21.5	35	1F	4	C		245		
PALE	24	1814	1815	1826	N19	E66	.918		29.7	12	SF	4	C		13		
HOLL	24	1815	1815	1826	N18	E68	.930		29.9	11	SN	3	C		13		
HOLL	24	1818E	1820U	1846	S29	W42	.775		21.6	28D	1F	3	C		244		
HOLL	24	1938	1941	1955	N19	E67	.925		29.8	17	SN	3	C		31		
PALE	24	1940	1940	1952	N20	E64	.906		29.6	12	SF	4	C		17		D
PALE	24	2028	2032U	2051	N16	E09	.284		25.5	23	1B	4	C		244		
MANI	25	0020E	0021U	0029D	S07	E35	.589		27.6	9D	SN	1	V		70	.9	F
LEAR	25	0021E	0022U	0033D	N11	E04	.168		25.3	12D	SF	3	C		89		
LEAR	25	0021E	0023U	0033D	S09	E26	.473		27.0	12D	SN	3	C		67		
MANI	25	0100E	0101	0117D	N15	E10	.279		25.8	17D	1B	1	V		250	2.7	F
MANI	25	0105E	0106	0126D	N19	E65	.911		29.9	21D	1B	1	V		170	3.4	
ISTA	25	0735		0813	N15	E04	.232		25.6	38	1N						E
ISTA	25	0752		0808	S08	E30	.524		27.6	16	SN						E
RAMY	25	1227	1228	1234	N13	W02	.191		25.4	7	SB	3	C		56		
RAMY	25	1236	1240	1251	N14	W02	.208		25.4	15	SB	3	C		90		
RAMY	25	1322	1325	1336	N10	W03	.146		25.3	14	SN	3	C		57		
HOLL	25	1540E	1748	1852	N19	E55	.832		29.8	192D	1B	3	C		242		
HOLL	25	2150	2204	2353	N13	W04	.200		25.6	123	2B	3	C		523		D
HOLL	25	2237	2258	2353	N18	E52	.802		29.8	76	SN	3	C		44		
LEAR	26	0035	0038	0048	N11	W07	.193		25.5	13	SB	3	C		54		
LEAR	26	0144	0145	0219	N18	E50	.782		29.8	35	SF	3	C		35		
LEAR	26	0213	0244	0346	N13	W05	.205		25.7	93	SN	3	C		117		
LEAR	26	0235	0236	0242	S17	E68	.938		1.2	7	SF	3	C		14		
LEAR	26	0301	0334	0434	S07	E17	.331		27.4	93	1N	3	C		409		
PEKG	26	0328E	0328U	0350	S06	E16	.309		27.3	22D	SN		P	0328	168	1.8	F
PEKG	26	0328E	0328U	0348	N13	W07	.221		25.6	20D	SN		P	0328	143	1.5	F
LEAR	26	0343	0346	0401	S17	E67	.932		1.2	18	SF	3	C		16		
LEAR	26	0422	0423	0428	N13	W04	.198		25.9	6	SN	3	C		21		
PEKG	26	0423	0431	0450	N13	W06	.212		25.7	27	SN		C	0431	139	1.4	E

Hα SOLAR FLARES

JUNE 1981

OBSERVATORY	OBSERVED UT				LOCATION					DURATION	IMPORTANCE	OBS.		MEASUREMENTS			REMARKS
	DAY	START	MAX. PHASE	END	APPROX. LAT.	APPROX. MER. DIST.	CENTRAL DISTANCE	HALE PLAGE REGION	CMP. DAY	MIN.		CONF.	TYPE	TIME UT	MEAS. AREA Mil. of Disk	CORR. AREA Sq. Deg.	
PEKG	26	0518	0525	0651	N13	W07	.221		25.7	93	SN		C	0525	139	1.4	E
LEAR	26	0521	0532	0612	N12	W07	.207		25.7	51	SN	3	C		54		
LEAR	26	0531	0534	0539	S18	E64	.915		1.0	8	SF	3	C		20		
LEAR	26	0639	0646	0759	N12	W08	.217		25.7	80	SB	3	C		183		
PEKG	26	0641	0650	0740	N13	W07	.221		25.8	59	SB		C	0650	151	1.6	E
ATHN	26	0646E	0646	0923	N12	W08	.217		25.7	163D	SB	3	C		159		
BUCA	26	0648	0654	0755	N15	W09	.267		25.6	67	1N		C	0654	268	2.9	E
ISTA	26	0710E		0815	N13	W08	.230		25.7	65D	2B						FZ
ISTA	26	0745		0800	S08	E18	.353		27.7	15	SN						EU
HOLL	26	1352	1425	1636	N12	W13	.278		25.6	164	SN	3	C		159		
HOLL	26	1546	1546	1555	N18	E43	.707		29.9	3	SF	3	C		18		
PALE	26	1708E	1734U	1741D	S15	E62	.897		1.4	33D	SF	3	C		57		
HOLL	26	1713	1713	1733	N14	W14	.311		25.7	20	SF	3	C		34		
PALE	26	1715E	1715U	1741D	N12	W15	.305		25.6	26D	SF	3	C		103		
HOLL	26	1720	1749	21140	S16	E59	.875		1.1	234D	SB	3	C		110		
HOLL	26	1743	1806	1820	N18	E41	.684		29.8	37	1N	3	C		175		
HOLL	26	1805	1807	2013	N14	W15	.324		25.6	128	SB	3	C		170		
HOLL	26	1854	1856	1912	N18	E41	.684		29.9	18	SN	3	C		29		
PEKG	26	2330E	2333	2355	N12	W19	.361		25.6	25D	SB		P	2333	134	1.5	E
LEAR	26	2341E	0015U	0013D	N13	W18	.355		25.6	38D	SB	2	C		72		
MANI	26	2343E	2344U	2349D	N13	W18	.355		25.6	6D	SN	1	V		140	1.5	F
PEKG	27	0007E	0020	0045	N13	W15	.313		25.9	38D	SB		C	0020	113	1.2	E
MANI	27	0013E	0015U	0025D	N13	W18	.354		25.7	12D	SN	1	V		50	.5	
PALE	27	0023E	0025	0110D	N13	W16	.326		25.8	47D	SN	3	C		193		
PEKG	27	0138	0156	0213	S13	E58	.862		1.4	35	1N		C	0156	105	2.1	D
LEAR	27	0153E	0153U	0202	S14	E57	.855		1.4	9D	SN	3	C		138		
MANI	27	0155E	0155U	0206D	S13	E58	.862		1.4	11D	SN	1	V		60	1.1	
PEKG	27	0315	0320	0335	S12	E57	.852		1.4	20	SB		C	0320	59	1.2	D
LEAR	27	0320	0322	0341	S12	E57	.852		1.4	21	SB	3	C		72		D
MANI	27	0324E	0325U	0333	S13	E57	.854		1.4	9D	SN	1	V		50	.9	
PEKG	27	0525E	0530U	0535	S13	E56	.845		1.4	10D	SN		C	0530	59	1.1	D
LEAR	27	0528E	0528U	0545	S13	E55	.836		1.4	17D	SB	3	C		78		
WEND	27	0641E		0651	N18	E33	.587		29.8	10D	SF		C	0641	50	.6	
LEAR	27	0812	0813	0819D	S16	E57	.859		1.6	7D	SB	3	C		59		
WEND	27	0815E		0823	S17	E60	.885		1.8	8D	SF		C	0815	56	1.2	
ATHN	27	0817	0818	0928	S18	E58	.871		1.7	71	1N	3	C		159		
WEND	27	0821E		0826D	N20	E35	.622		30.0	5D	1N		C	0826	238	3.2	E
ATHN	27	0825	0827	1113	N17	E32	.569		29.8	168	1B	3	C		190		
PEKG	27	0828	0835	0843	N20	E37	.645		30.1	15	SB		P	0835	139	1.9	F
WEND	27	0838E	0905	1014	N19	E33	.592		29.8	96D	1N		C	0905	344	4.5	E
PEKG	27	0846	0851	0935	N20	E31	.574		29.7	43	1B		P	0851	189	2.4	F
LEAR	27	0914E	0917	0919D	N18	E29	.536		29.6	5D	2B	2	C		595		
WEND	27	1253	1255	1301	S17	E50	.799		1.3	8	SN		C	1255	81	1.4	
HOLL	27	1340	1346	1407	N14	W27	.486		25.5	27	SF	3	C		45		
HOLL	27	1517	1518	1524	N13	W26	.467		25.7	7	SN	3	C		52		
HOLL	27	1539	1546	1550	S16	E51	.805		1.5	11	SF	3	C		22		
HOLL	27	1549	1549	1558	N15	W76	.970		22.0	9	SN	3	C				
HOLL	27	1734	1735	1739	N09	W34	.566		25.2	5	SF	3	C		26		
HOLL	27	1803	1804	1809	N14	W29	.514		25.6	6	SN	3	C		74		
HOLL	27	1819	1822	1835	S08	W05	.200		27.4	16	SF	3	C		54		
HOLL	27	1820	1822	1824	N09	W34	.566		25.2	4	SF	3	C		25		
PEKG	27	2250	2252	2257	S14	E44	.726		1.3	7	SF		C	2252	50	.7	D
PEKG	28	0005E	0027U	0029	S16	E45	.745		1.4	24D	SB		C	0027	55	.8	D
LEAR	28	0024	0025	0034	S17	E44	.738		1.3	10	SB	3	C		50		
PEKG	28	0213	0214	0225	N15	W34	.585		25.5	12	SN		C	0214	50	.6	D
LEAR	28	0221	0221	0239	N15	W34	.585		25.5	18	SF	3	C		31		
LEAR	28	0258	0258	0309	N13	W33	.563		25.6	11	SN	3	C		29		
PEKG	28	0338	0339	0345	S16	E44	.734		1.5	7	SN		C	0339	42	.6	D
PEKG	28	0400E	0402	0406	S16	E44	.734		1.5	6D	SN		C	0402	46	.7	D
LEAR	28	0405E	0405U	0413	S16	E42	.713		1.3	8D	SN	3	C		28		
LEAR	28	0438	0538	0543	S18	E48	.783		1.8	62	SB	3	C		56		
PEKG	28	0610	0620	0625	S11	E57	.851		2.5	15	SN		C	0620	42	.8	E
LEAR	28	0716	0720	0730	N17	E18	.389		29.7	14	SF	3	C		31		
PEKG	28	0716	0718	0725	N18	E19	.410		29.7	9	SN		C	0718	50	.6	E
PEKG	28	0945	0947	0947D	N18	E22	.447		30.1	2D	SN		P	0947	42	.5	E
UPIC	28	0951	0952	1020U	N21	E21	.463		30.0	29U	1F		P	0957	204	2.4	
UPIC	28	1155	1205	1230	N22	E12	.386		29.4	35	SF		P	1205	61	.7	
RAMY	28	1313E	1315	1356D	S09	W15	.323		27.4	43D	1N	3	C		274		
UPIC	28	1320E		1350	S08	W16	.327		27.4	30D	1N		P	1320	224	2.5	U
ATHN	28	1322	1324	1346	N15	W37	.623		25.8	24	SN	3	C		95		D

Hα SOLAR FLARES

JUNE 1981

OBSERVATORY	OBSERVED UT				LOCATION					DURATION — MIN.	IMPORTANCE	OBS.		MEASUREMENTS			REMARKS
	DAY	START	MAX. PHASE	END	APPROX. LAT.	APPROX. MER. DIST.	CENTRAL DISTANCE	HALE PLAGE REGION	CMP. DAY			COND.	TYPE	TIME — UT	MEAS. AREA Mill. of Disk	CORR. AREA Sq. Deg.	
UPIC	28	1340E	1340U	1350	S13	E36	.629		1.3	10D	SF		P	1340	82	1.1	
RAMY	28	1451	1455	1501	N17	E13	.331		29.6	10	SF	3	C		63		
HOLL	28	1845	1848	1852	N09	W43	.685		25.6	7	SF	3	C		71		
HOLL	28	2014	2021	2029	N17	E10	.301		29.6	15	SN	3	C		39		
LEAR	29	0034	0041	0158	S15	E31	.579		1.3	84	1B	3	C		377		
PEKG	29	0038E	0047	0112	S16	E32	.598		1.4	34D	1B		P	0047	399	5.1	FK
PALE	29	0038	0042	0220D	S14	E31	.573		1.4	102D	1B	3	C		421		
MANI	29	0039E	0041	0112	S15	E32	.591		1.4	33D	1B	1	V		350	4.6	FE
LEAR	29	0040	0041	0045D	S15	E31	.579		1.4	5D	1B	3	C		377		
LEAR	29	0100	0108	0136	N11	W47	.736		25.5	36	SF	3	C		41		
PEKG	29	0410	0415	0415D	N12	W50	.770		25.4	5D	SN		P	0415	97	1.5	E
LEAR	29	0411E	0421	0546D	N12	W48	.748		25.6	95D	1B	3	C		352		
PALE	29	0413	0417	0420D	N10	W49	.757		25.5	7D	1F	3	C		209		
MANI	29	0418E	0422	0442	N15	W47	.742		25.7	24D	1N	1	V		300	4.6	F
LEAR	29	0505	0505	0509	S21	W59	.886		24.8	4	SF	3	C		20		
LEAR	29	0751	0755	0834	S21	W61	.900		24.8	43	SN	3	C		34		
LEAR	29	0803	0824	0841	S15	E26	.518		1.3	38	SN	3	C		38		
PEKG	29	0847	0852	0857	N13	W24	.437		27.6	10	SN		P	0852	42	.5	E
LEAR	29	0851	0852	0901	N14	W23	.473		27.6	10	SF	3	C		34		
PALE	29	1932E	1936U	1939	S16	E22	.479		1.5	7D	SF	3	C		40		
PALE	29	2001	2001	2013D	S16	E22	.479		1.5	12D	SF	3	C		58		
PALE	30	0149	0152U	0202	S11	E19	.397		1.5	13	SN	3	C		137		
LEAR	30	0622E	0622U	0643	N11	W64	.839		25.5	27D	SF	3	C		107		
LEAR	30	0644E	0649	0754	S14	E11	.342		1.1	70D	SF	3	C		94		

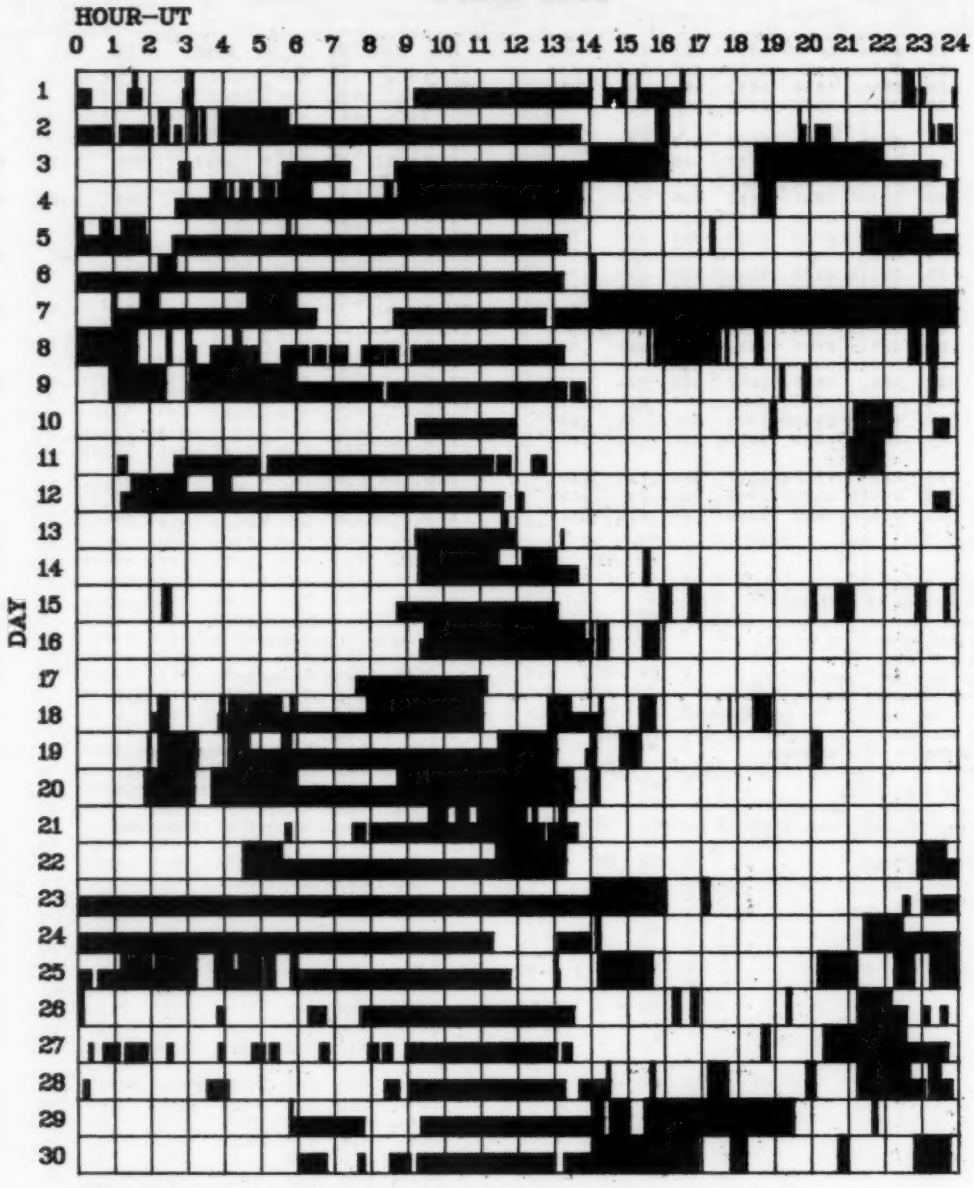
"REMARKS":

A = Eruptive prominence whose base is less than 90° from central meridian.
B = Probably the end of a more important flare.
C = Invisible 10 minutes before.
D = Brilliant point.
E = Two or more brilliant points.
F = Several eruptive centers.
G = No visible spots in the neighborhood.
H = Flare accompanied by high-speed dark filament.
I = Active region very extended.
J = Distinct variations of plage intensity before or after the flare.
K = Several intensity maxima.
L = Existing filaments show signs of sudden activity.
M = White-light flare.
N = Continuous spectrum shows effects of polarization.
O = Observations have been made in the H and K lines of CaII.
P = Flare shows helium D3 in emission.
Q = Flare shows Balmer continuum in emission.
R = Marked asymmetry in H-alpha line suggests ejection of high-velocity material.
S = Brightness follows disappearance of filament in same position.
T = Region active all day.
U = Two bright branches, parallel or converging.
V = Occurrence of an explosive phase: important, expansion within roughly 1 minute that often includes a significant intensity increase.
W = Great increase in area after time of maximum intensity.
X = Unusually wide H-alpha line.
Y = System of loop-type prominences.
Z = Major sunspot umbra covered by flare.

INTERVALS OF NO FLARE PATROL OBSERVATION

FOR PRECEDING SOLAR FLARE TABLE

JUNE 1981



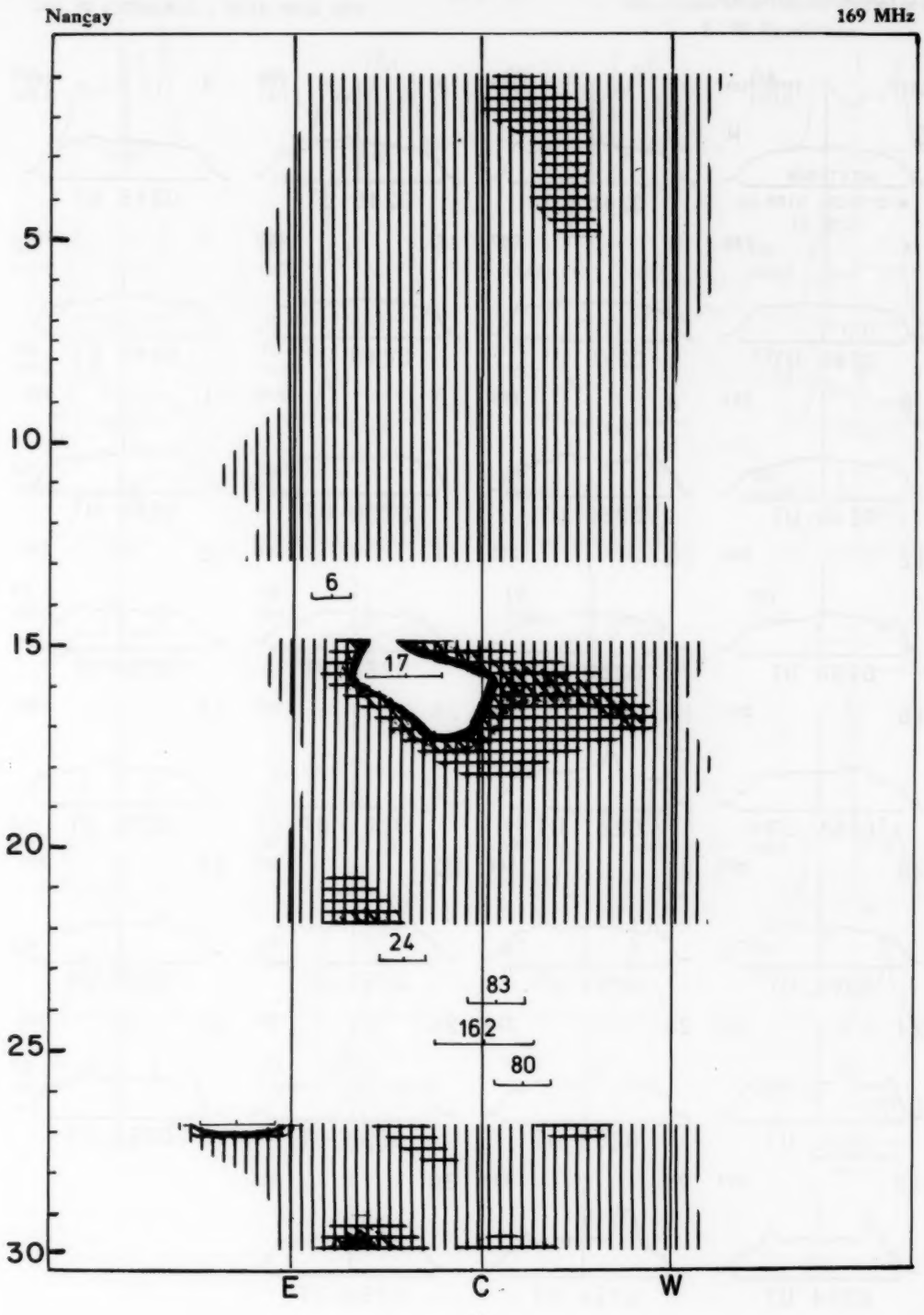
Observatories included in total patrol:

Athens	Holloman	Learmonth	Palehua	Ramey
Bucharest	Istanbul	Manila	Peking	Upice
				Wendelstein

Times of no flare patrol are shown by the shaded area for each day divided into times of no cinematographic patrol (bottom half of day) and times of neither visual nor cinematographic patrol (top half of day).

SOLAR RADIO EMISSION
INTERFEROMETRIC OBSERVATION

JUNE 1981

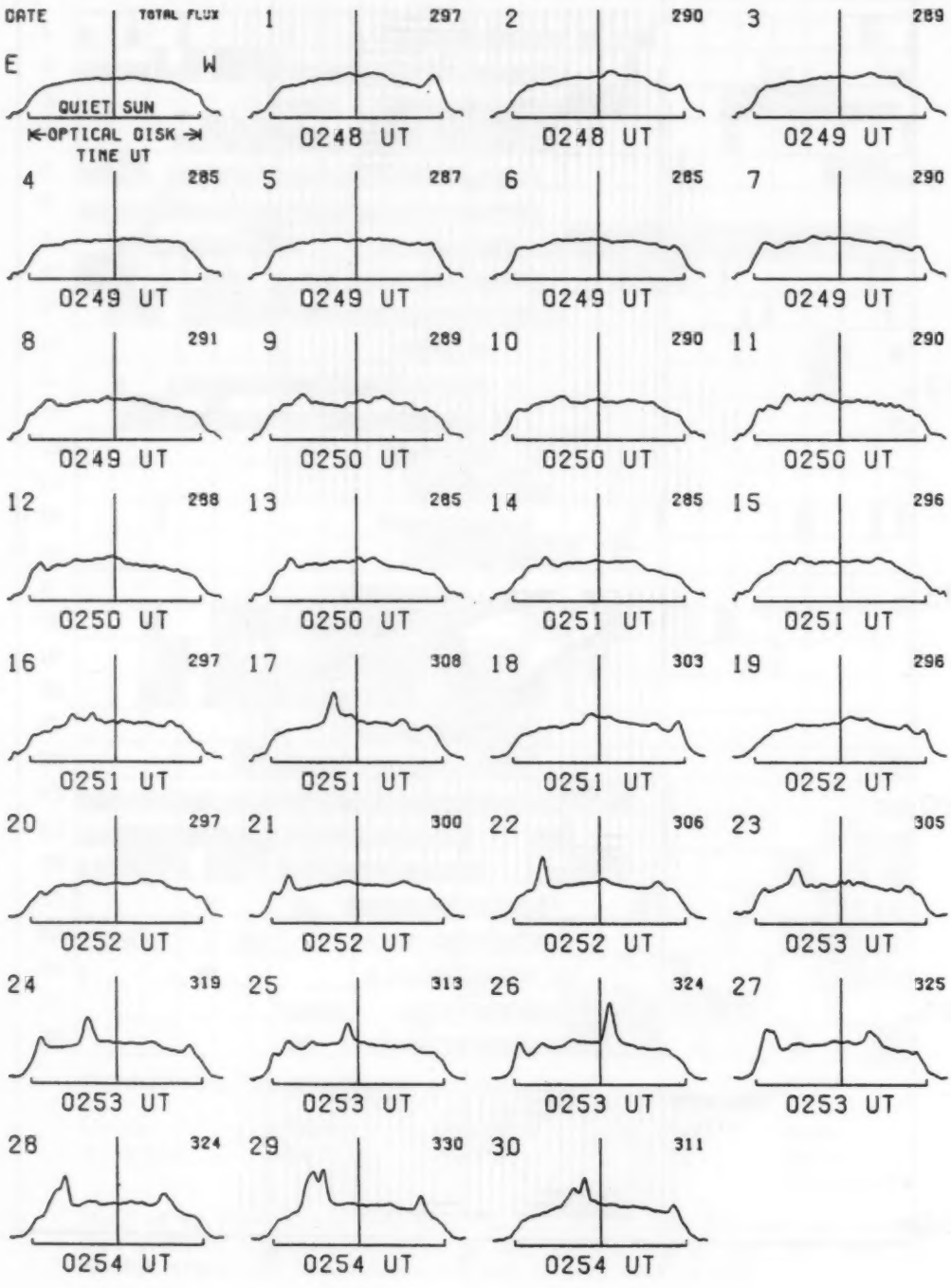


EAST-WEST SOLAR SCANS

JUNE 1981

TOYOKAWA, JAPAN

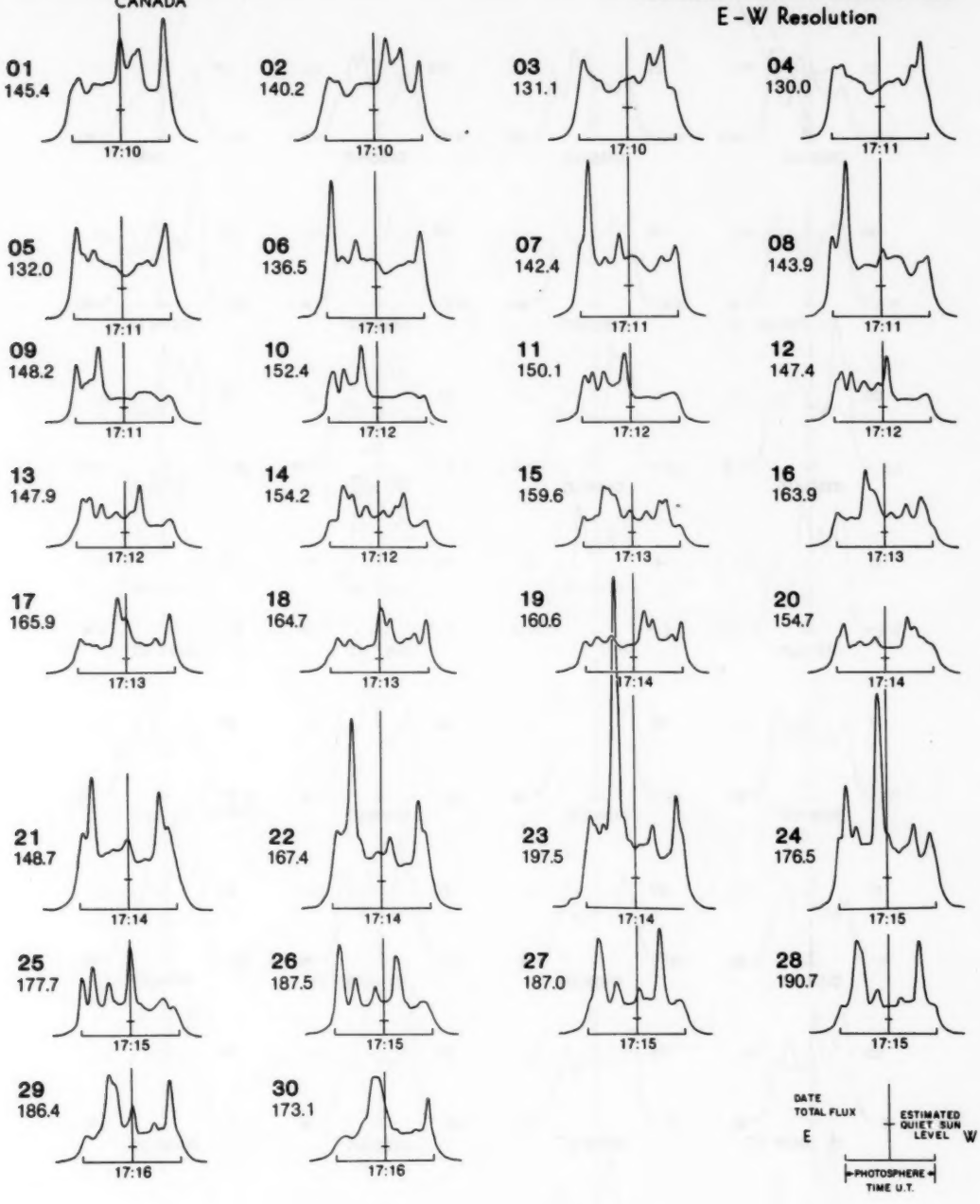
3 CM
FAN BEAM WITH 1.1 MINUTES OF ARC



EAST-WEST SOLAR SCANS
JUNE 1981

ALGONQUIN RADIO OBSERVATORY
CANADA

10·7 cm
Fan Beam with 1·5 minutes of arc
E-W Resolution

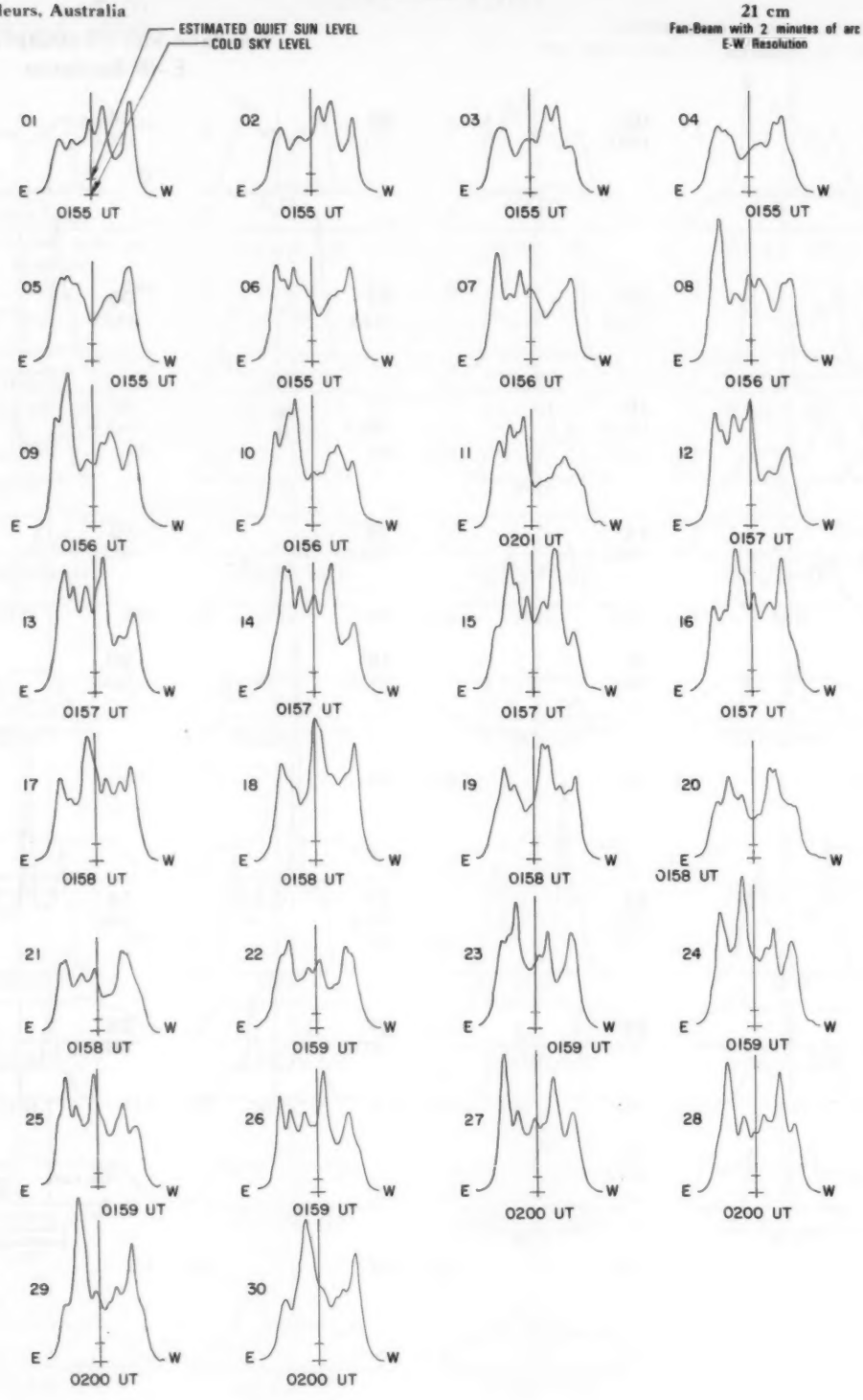


EAST-WEST SOLAR SOLAR SCANS

JUNE 1981

Fleurs, Australia

21 cm
Fan-Beam with 2 minutes of arc
E-W Resolution

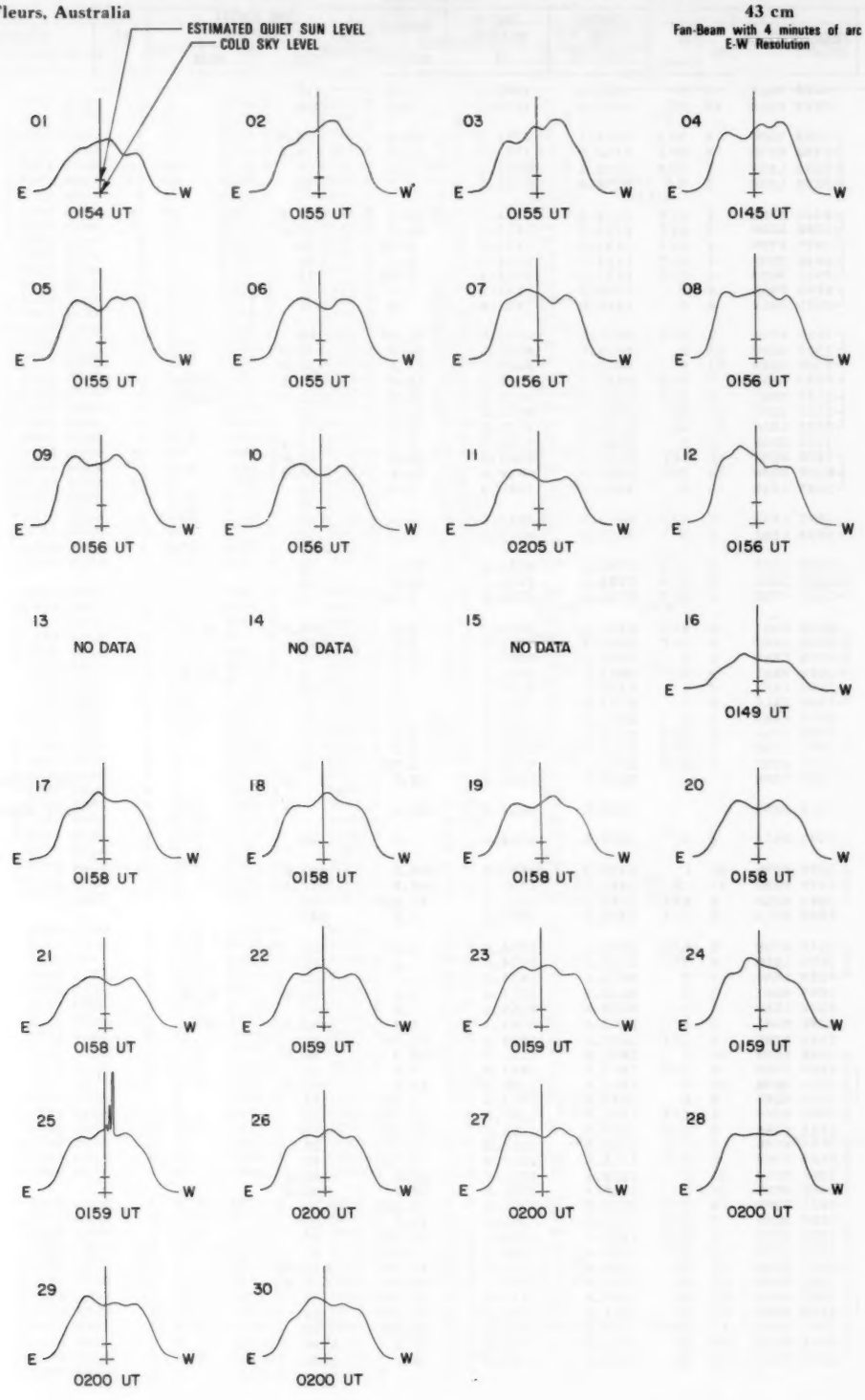


EAST-WEST SOLAR SCANS

JUNE 1981

Fleurs, Australia

43 cm
Fan-Beam with 4 minutes of arc
E-W Resolution



SOLAR RADIO EMISSION
SELECTED FIXED FREQUENCY EVENTS
JUNE 1981

DAY OF MONTH	FREQUENCY	STATION	TYPE		STARTING TIME	TIME OF MAXIMUM	DURATION	FLUX DENSITY 10^{-22} Wm^{-2} Hz^{-1}		INT	REMARKS
					UT	UT	MINUTES	PEAK	MEAN		
02	8800	PALE	8	S	1803.8	1805.3	1.8	110			
	8800	PALE	47	GB	1935.6	1936.1	2.5	2200			
08	3200	BERN	4	S/F	0748.1	0751.3	45.0	24.0			
	8400	BERN	4	S/F	0750.0	0751.3	15.0	178.0			
	2695	LEAR	4	S/F	0750.1	0751.3	2.2	15			
	8800	LEAR	8	S	0750.6	0751.3	1.7	98			
09	8400	BERN	4	S/F	1433.3	1434.3	30.0	183.0			
	3200	BERN	4	S/F	1433.3	1434.3	30.0	82.0			
	2695	ATHN	4	S/F	1433.6	1434.5	9.2D	42			
	8800	SGMR	4	S/F	1433.6	1434.3	3.7	93			
	2695	SGMR	4	S/F	1433.6	1434.3	3.5D	41			
	8800	PALE	8	S	1950.3	1951.3	1.7	37			
	2695	PALE	8	S	1950.6	1951.0	.9	30			
10	2695	ATHN	4	S/F	0621.5	0623.6	21.6D	100			
	3200	BERN	41	F	0621.6	0623.5	30.0	173.0			
	8400	BERN	41	F	0621.6	0629.5	27.0	166.0			
	8800	MANI	4	S/F	0622.0	0629.0	10.0	71.8	23.9		
	2695	MANI	4	S/F	0622.0	0623.8	10.0	115.9	38.6		
	2695	LEAR	47	GB	0622.1	0623.6	12.7	119			
	8800	LEAR	47	GB	0622.6	0629.5	12.5	130			
	3200	BERN	1	S	0701.2	0702.7	7.0	8.0			
	3200	BERN	20	GRF	0905.2	0909.3	24.0	15.0			
	8400	BERN	20	GRF	0905.4	0910.0	15.0	18.0			
	2695	LEAR	8	S	0909.1	0909.3	1.9	11			
12	2695	LEAR	4	S/F	0013.3	0013.8	2.2	11			
	8800	LEAR	8	S	0013.5	0014.0	1.3	13			
16	8800	LEAR	4	S/F	0744.3	0745.3	30.7	10			
	2695	LEAR	4	S/F	0744.5	0745.1	30.5	10			
	2695	ATHN	4	S/F	0744.6	0745.8	3.4D	11			
17	8800	MANI	4	S/F	0002.2	0004.2	2.8	60.6	20.2		
	8800	LEAR	4	S/F	0002.3	0003.8	2.8	110			
	2695	LEAR	8	S	0003.1	0004.1	1.9	40			
	2695	MANI	3	S	0003.1	0004.2	1.9	32.7	10.9		
	8800	LEAR	8	S	0132.8	0133.1	.8	48			
	8800	PALE	8	S	0133.0	0133.1	.3	47			
	8800	LEAR	8	S	0251.6	0251.8	.2	16			
	8800	LEAR	4	S/F	0322.6	0324.3	4.2	35			
	2695	LEAR	4	S/F	0322.8	0324.1	3.3	10			
	2695	ATHN	4	S/F	0947.1	0949.1	3.9D	19			
	3200	BERN			0947.8	0948.3	20.0	.0			ONLY PAPER REC
18	3200	BERN			0936.0	1012.3	104.0	.0			ONLY PAPER REC
20	2695	PALE	8	S	1654.6	1654.6	.2	26			
22	3200	BERN	46	C	1445.7	1501.0	180.0	409.0			
	8400	BERN	47	GB	1445.7	1458.8	180.0	557.0			
	2695	ATHN	4	S/F	1447.5	1501.3	41.0D	330			
	8800	PALE	4	S/F	2054.8	2055.6	5.0	240			
23	2695	ATHN	4	S/F	0634.0	0634.6	5.0D	82			
	2695	LEAR	8	S	0634.1	0634.6	.9	100			
	8800	LEAR	8	S	0634.1	0634.8	.7	20			
	2695	MANI	3	S	0636.2	0637.0	1.0	93.0	31.0		
	8800	LEAR	8	S	0659.0	0659.1	.6	48			
	8800	MANI	3	S	0701.0	0701.3	2.0	63.8	21.3		
	2695	ATHN	4	S/F	1002.3	1009.1	81.7D	51			
	3200	BERN	46	C	1051.0	1107.6	80.0	95.0			
	8800	SGMR	4	S/F	1052.0	1054.0	4.0	37			
	8400	BERN	46	C	1052.0	1108.9	80.0	183.0			
	2695	SGMR	8	S	1053.0	1053.8	1.8D	85			
	2695	SGMR	4	S/F	1101.8	1107.5	14.7D	60			
	8800	SGMR	4	S/F	1102.3	1109.0	21.3D	150			
	2695	ATHN	4	S/F	1210.6	1212.0	2.4D	25			
	8800	SGMR	4	S/F	1210.6	1212.0	9.5D	85			
	3200	BERN	46	C	1210.6	1211.9	50.0	40.0			
	8400	BERN	46	C	1210.6	1211.9	50.0	100.0			
	2695	SGMR	4	S/F	1210.8	1211.8	6.2D	31			
	8800	SGMR	4	S/F	1220.1	1224.1	10.7	23			
	2695	SGMR	4	S/F	1220.1	1224.1	10.7D	24			
	2695	ATHN	4	S/F	1220.6	1224.3	7.5D	17			
	8400	BERN	47	GB	1706.0	1732.6	45.0D	1640.0U			
	3200	BERN	47	GB	1706.0	1733.1	70.0D	1620.0			
	2695	SGMR	47	GB	1709.8	1712.6	62.5D	119			
	8800	SGMR	47	GB	1710.0	1718.5	63.0D	100			
	2695	ATHN	47	GB	1714.8	1732.5	26.5D	1600			
	8800	PALE	49	GB	1731.8	1733.0	18.2	1700			
	2695	PALE	49	GB	1731.8	1733.3	18.2	2600			

SOLAR RADIO EMISSION
SELECTED FIXED FREQUENCY EVENTS

JUNE 1981

DAY OF MONTH	FREQUENCY	STATION	TYPE	STARTING TIME	TIME OF MAXIMUM	DURATION	FLUX DENSITY 10^{-22} Wm^{-2} Hz^{-1}		INT	REMARKS
				UT	UT	MINUTES	PEAK	MEAN		
24	2695	LEAR	8 S	0036.6	0036.8	.2	38			
	2695	MANI	2 S/F	0155.2	0200.3	7.8	8.8	2.9		
	8800	LEAR	4 S/F	0158.8	0200.0	2.3	15			
	2695	LEAR	8 S	0159.1	0200.0	2.0	13			
	3200	BERN	47 GB	0629.5	0631.1	60.0	2603.0			
	8800	MANI	47 GB	0629.5	0630.8	6.0	633.7	211.2		
	2695	MANI	3 S	0629.7	0631.1	4.8	463.2	154.4		
	8400	BERN	47 GB	0629.7	0630.8	60.0	1083.0			
	8800	LEAR	47 GB	0630.0	0630.8	5.3	990			
	2695	LEAR	4 S/F	0630.0	0631.1	4.8	460			
	2695	LEAR	8 S	0736.1	0736.5	.7	09			
	8800	LEAR	8 S	0736.3	0736.5	.5	19			
	8800	SGMR	4 S/F	1112.6	1122.6	13.5	30			
	3200	BERN	46 C	1319.2	1320.9	45.0	419.0			
	2695	SGMR	4 S/F	1320.0	1320.8	10.6D	70			
	8400	BERN	46 C	1320.0	1320.9	45.0	48.0			
	8800	SGMR	4 S/F	1320.1	1320.8	10.7	29			
	2695	ATHN	4 S/F	1320.1	1320.8	7.4D	52			
	8800	SGMR	4 S/F	1352.1	1352.6	2.2	34			
	8400	BERN	4 S/F	1514.0	1515.8	12.0	103.0			
	3200	BERN	4 S/F	1514.2	1515.8	12.0	300.0			
	2695	ATHN	4 S/F	1514.5	1515.3	3.0D	40			
	2695	ATHN	4 S/F	1524.5	1527.3	5.0	11			
	3200	BERN	47 GB	1700.1	1712.5	35.0	506.0			
	8800	SGMR	4 S/F	1708.3	1712.6	7.5	40			
	8400	BERN	46 C	1709.5	1712.6	15.0	52.0			
	2695	SGMR	4 S/F	1709.6	1712.6	6.2D	83			
	2695	ATHN	4 S/F	1710.5	1712.5	3.8D	53			
	2695	ATHN	4 S/F	1717.8	1727.5	14.7D	37			
	8800	SGMR	4 S/F	1727.1	1727.6	5.5	17			
	2695	SGMR	4 S/F	1727.1	1727.6	5.7D	13			
25	2695	PALE	8 S	0057.1	0058.3	1.7	80			
	8800	MANI	4 S/F	0057.5	0059.4	5.2	126.0	42.0		
	2695	LEAR	8 S	0057.6	0058.1	1.4	85			
	8800	PALE	8 S	0057.6	0058.1	1.2	290			
	8800	LEAR	8 S	0057.8	0058.3	1.0	250			
	2695	MANI	4 S/F	0058.5	0059.5	2.5	69.5	23.2		
	8800	LEAR	4 S/F	0111.1	0111.8	2.9	25			
	8800	PALE	47 GB	0118.6	0120.3	.2	36			
	8800	LEAR	4 S/F	0605.3	0605.3	490.6	16			
	2695	LEAR	4 S/F	0605.3	0605.3	490.6	15			
	8400	BERN	3 S	0920.3	0921.2	12.0	231.0			
	3200	BERN	3 S	0920.3	0921.2	18.0	70.0			
	2695	LEAR	8 S	0921.1	0921.3	.4	31			
	8800	LEAR	8 S	0921.1	0921.3	.2	160			
	2695	SGMR	4 S/F	1226.6	1228.8	4.5D	26			
	2695	ATHN	4 S/F	1227.3	1228.6	2.5D	24			
	8800	SGMR	4 S/F	1227.6	1228.3	4.2	13			
	2695	PALE	4 S/F	2201.6E	2202.3	7.0	320			
	8800	PALE	47 GB	2201.6E	2202.1	12.0	870			
	8800	MANI	3 S	2201.8	2202.5	3.2	289.1	96.4		
	2695	MANI	3 S	2202.3	2203.0	4.7	208.2	69.4		
26	2695	LEAR	4 S/F	0034.6	0036.1	4.2	09			
	2695	LEAR	4 S/F	0325.0	0325.6	13.3	33			
	2695	MANI	4 S/F	0325.7	0338.0	18.3	17.3	5.8		
	8800	LEAR	4 S/F	0327.6	0329.3	10.5	15			
	8800	LEAR	4 S/F	0521.5	0522.1	6.0	11			
	8800	LEAR	4 S/F	0529.1	0537.8	15.0	11			
	2695	ATHN	4 S/F	0630.6	0645.3	71.5D	21			
	8800	LEAR	8 S	0642.6	0642.8	2.0	29			
	2695	LEAR	4 S/F	0642.8	0643.1	565.6	13			
	8800	LEAR	4 S/F	0647.6	0649.6	4.5	23			
	2695	SGMR	4 S/F	1109.3	1110.3	2.2D	11			
	8400	BERN	3 S	1341.0	1342.0	2.0	84.0			
	3200	BERN	3 S	1341.1	1342.3	1.0	5.0			
	8800	SGMR	4 S/F	1341.1	1341.6	2.4D	81			
	3200	BERN	3 S	1803.1	1805.1	10.0	.0			ONLY PAPER REC
	2695	PALE	8 S	1804.3	1805.3	1.2	20			
	8800	PALE	8 S	1804.5	1805.1	1.3	73			
27	2695	LEAR	4 S/F	0812.0	0812.8	5.8	07			
	2695	LEAR	4 S/F	0821.5	0825.8	14.3	17			
	8800	LEAR	4 S/F	0821.5	0825.8	14.3	09			
	2695	LEAR	47 GB	0845.6	0908.6	33.0	330			
	8400	BERN	46 C	0845.7	0900.0	140.0	115.0			
	3200	BERN	46 C	0845.8	0900.0	140.0	208.0			
	8800	LEAR	47 GB	0846.8	0903.0	24.3	110			
	2695	ATHN	4 S/F	0847.3	0858.0	61.3D	200			
	2695	MANI	4 S/F	0848.2	0909.0	28.3	269.1	89.7		
	8400	BERN	1 S	1112.6	1113.1	15.0	32.0			
	8800	SGMR	4 S/F	1112.8	1113.3	3.3D	26			
	3200	BERN	1 S	1113.0	1113.2	27.0	3.0			

SOLAR RADIO EMISSION
SELECTED FIXED FREQUENCY EVENTS

JUNE 1981

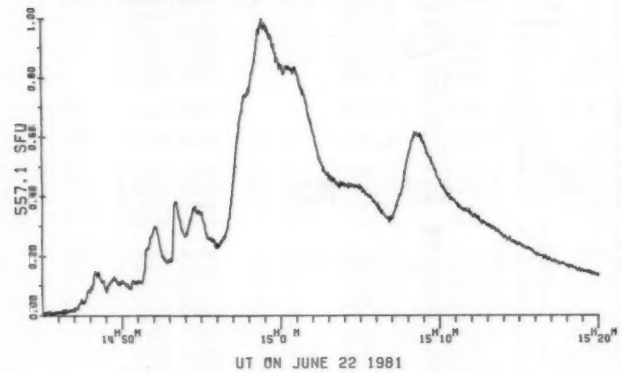
DAY OF MONTH	FREQUENCY	STATION	TYPE	STARTING TIME UT	TIME OF MAXIMUM UT	DURATION MINUTES	FLUX DENSITY 10^{-22} Wm^{-2} Hz^{-1} PEAK	FLUX DENSITY 10^{-22} Wm^{-2} Hz^{-1} MEAN	INT	REMARKS
27	3200	BERN	47 GB	1253.7	1255.7	18.0	538.0			
	8400	BERN	47 GB	1253.7	1255.6	15.0	556.0			
	2695	ATHN	47 GB	1254.0	1255.6	16.0D	580			
	8800	SGMR	8 S	1255.1	1255.6U	0.5D	410			
	2695	SGMR	47 GB	1255.3	1255.6U	0.3D	520			
28	8800	LEAR	8 S	0823.3	0823.6	.7	45			
	2695	LEAR	4 S/F	0823.3	0823.8	2.5	64			
	2695	LEAR	8 S	0840.8	0840.8	.2	15			
	2695	LEAR	8 S	0255.0	0255.1	.1	88			
	8800	LEAR	8 S	0257.3	0257.8	.4	31			
	2695	ATHN	4 S/F	0358.6	0359.1	2.9D	110			
	8800	LEAR	8 S	0358.6	0359.1	1.0	64			
	2695	LEAR	4 S/F	0358.6	0359.1	2.9	119			
	2695	PALE	8 S	0358.8	0359.1	1.3	92			
	8800	MANI	3 S	0400.0	0400.5	3.5	70.4	23.5		
	2695	MANI	3 S	0400.2	0400.7	4.3	136.8	45.6		
	8800	LEAR	8 S	0500.8	0500.8	.5	11			
29	8800	MANI	4 S/F	0036.5	0041.7	14.5	234.5	78.2		
	2695	MANI	4 S/F	0037.4	0042.0	10.6	56.6	18.9		
	8800	LEAR	4 S/F	0037.5	0041.5	32.5	160			
	8800	PALE	4 S/F	0037.6	0041.5	28.0	170			
	2695	LEAR	4 S/F	0037.8	0041.6	14.8	54			
	2695	PALE	4 S/F	0038.0	0041.5	8.3	48			
	8800	LEAR	8 S	0411.0	0413.0	1.3	19			
	8800	LEAR	8 S	0416.6	0417.3	.2	11			
	8800	LEAR	47 GB	0419.8	0429.0	32.5	37			
	2695	LEAR	47 GB	0419.8	0423.3	14.8	31			
	2695	ATHN	4 S/F	0420.0	0424.1	6.1D	24			
	2695	MANI	3 S	0422.2	0424.7	4.5	24.8	8.8		
	2695	PALE	4 S/F	0422.5	0423.0	3.3	34			
	8800	PALE	4 S/F	0422.8	0423.8	3.8	31			
	8800	PALE	4 S/F	2000.1	2001.1	6.8	110			
	2695	PALE	8 S	2001.0	2001.3	.6	27			
30	3200	BERN	3 S	0619.0	0621.0	6.8	19.0			
	2695	ATHN	4 S/F	0619.5	0622.1	4.6D	13			
	8400	BERN	3 S	0620.0	0621.0	6.8	33.0			
	2695	MANI	3 S	0620.5	0622.6	3.5	11.8	3.9		
	8800	MANI	3 S	0621.5	0622.3	2.5	30.9	10.3		
	8800	LEAR	8 S	0621.6	0621.8	.5	28			
	2695	LEAR	8 S	0621.6	0622.1	.2	15			
	3200	BERN	1 S	0732.7	0733.7	3.8	18.0			
	8400	BERN	3 S	0733.0	0733.6	3.0	14.0			
	8800	LEAR	8 S	0733.3	0733.5	.2	15			

SELECTED SOLAR NOISE BURSTS

JUNE 22-23, 1981

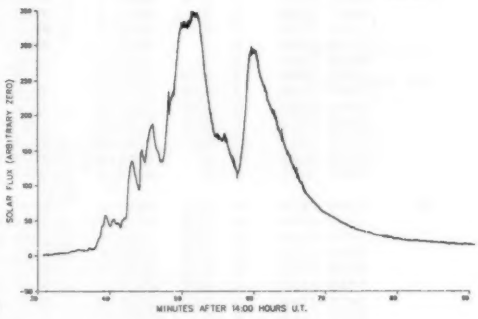
INSTITUTE OF APPLIED PHYSICS, UNIVERSITY OF BERNE, SWITZERLAND

I 8.4, F=8.4 GHZ, BW=6.0 MHZ, T=1.0 SEC



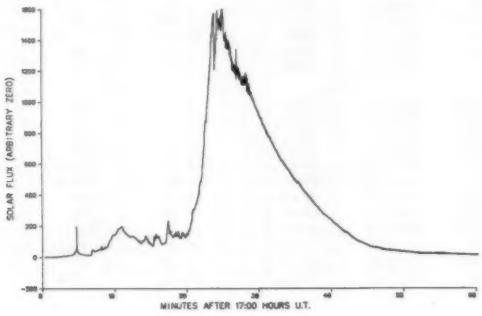
JUNE 22, 1981

SELECTED 2800 MHz SOLAR NOISE BURST
A.R.O. OTTAWA, ONT.
CANADA



JUNE 23, 1981

SELECTED 2800 MHz SOLAR NOISE BURST
A.R.O. OTTAWA, ONT.
CANADA



SELECTED SOLAR NOISE BURSTS

JUNE 24-27, 1981

INSTITUTE OF APPLIED PHYSICS, UNIVERSITY OF BERNE, SWITZERLAND

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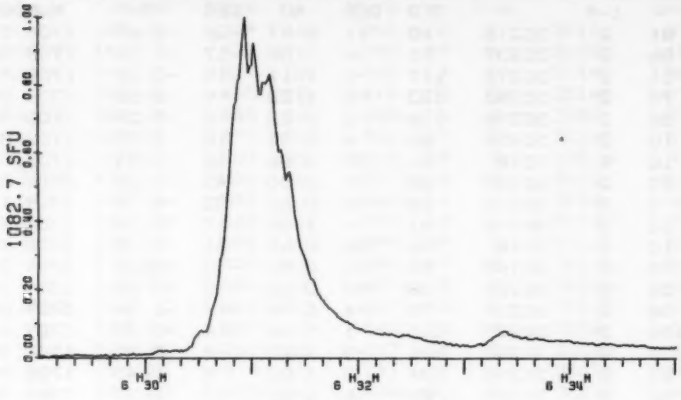
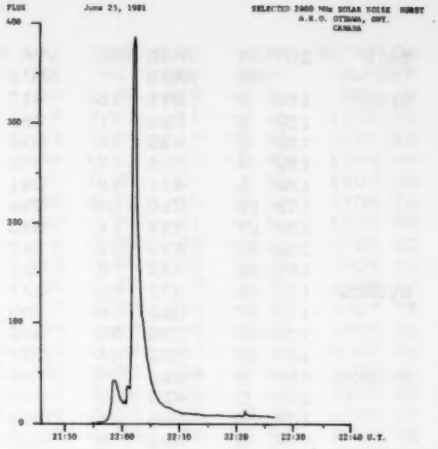


UT ON JUNE 24 1981



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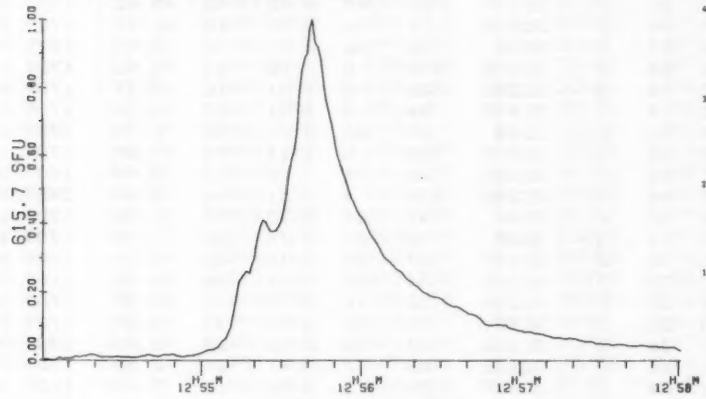
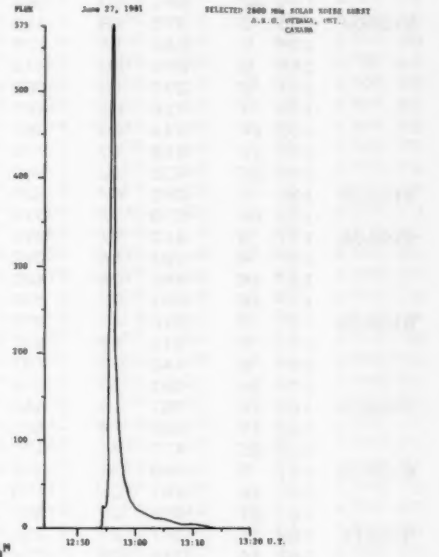


UT ON JUNE 27 1981



SOLAR WIND

Interplanetary Scintillations

JUNE 1981

DATE	DOY	UT HR	VMID KM/S	ERR	VPK KM/S	ERR	RATING 1-4	SOURCE	ELONG DEG	LAT DEG	DIST AU	DLON DEG	LAG DAY	ROTATION NUMBER
B10601	152	0	394	16	417	81	2	3C216	60	11	0.87	-28	-2.83	1709.03
	152	2	266	71	266	36	2	3C237	81	-4	1.00	-17	-1.31	1708.90
	152	3	438	19	394	31	2	3C273	117	-1	1.17	-13	-0.31	1708.96
	152	4	344	19	342	79	2	3C283	133	-5	1.22	-9	0.50	1708.89
	152	6	471	16	381	35	2	3C298	136	3	1.23	-8	0.29	1708.96
	152	15	310	14	294	10	3	3C459	80	4	0.99	18	1.27	1708.86
	152	17	349	11	340	10	4	3C48	41	29	0.66	42	1.34	1708.89
	152	20	213	17	217	23	2	3C147	30	44	0.50	-43	-7.68	1709.10
	152	22	340	8	361	9	3	3C161	38	-43	0.62	-33	-4.64	1709.11
B10602	153	15	377	60	277	12	2	3C459	81	4	1.00	17	1.28	1708.94
	153	17	362	10	353	10	4	3C48	42	28	0.67	41	1.38	1708.93
	153	20	398	98	362	75	2	3C147	30	46	0.50	-43	-5.66	1709.21
	153	22	352	14	397	20	3	3C161	38	-43	0.62	-32	-4.53	1709.15
B10603	154	2	367	39	338	30	2	3C237	79	-4	0.99	-17	-1.36	1709.04
	154	3	424	63	461	100	2	3C273	115	-1	1.16	-14	-0.37	1709.03
	154	4	366	25	401	122	2	3C283	131	-5	1.22	-9	0.37	1708.98
	154	6	366	8	435	23	2	3C298	134	3	1.23	-9	0.45	1708.99
	154	15	445	15	461	52	2	3C459	82	4	1.00	17	1.27	1709.00
	154	16	391	10	384	15	4	3C48	43	28	0.68	41	1.53	1708.97
	154	22	341	10	346	10	3	3C161	37	-44	0.60	-32	-4.62	1709.18
B10604	155	0	375	88	415	21	2	3C216	57	12	0.84	-30	-3.14	1709.15
	155	1	242	14	179	41	2	3C222	72	-6	0.95	-17	-1.70	1709.00
	155	2	290	20	272	27	2	3C237	78	-4	0.98	-17	-1.42	1709.03
	155	3	297	12	283	25	2	3C273	114	-1	1.16	-13	-0.05	1708.99
	155	4	418	52	497	50	2	3C283	130	-5	1.21	-10	0.17	1709.05
	155	14	444	28	387	44	3	3C459	83	4	1.01	17	1.26	1709.04
	155	16	318	10	370	12	2	3C48	44	27	0.69	39	1.12	1708.98
	155	20	435	32	480	21	2	3C147	29	49	0.48	-42	-5.41	1709.29
B10605	156	1	295	47	329	44	2	3C222	71	-6	0.95	-18	-1.76	1709.09
	156	16	578	57	578	57	2	3C48	45	26	0.71	38	1.93	1709.09
B10606	157	3	412	97	390	43	2	3C273	112	0	1.15	-14	-0.43	1709.14
	157	4	204	16	242	75	2	3C283	128	-5	1.21	-10	1.11	1708.92
	157	14	441	26	423	19	2	3C459	84	5	1.01	17	1.31	1709.11
	157	16	491	25	508	26	2	3C48	45	26	0.71	38	1.74	1709.11
B10608	159	3	310	47	299	64	2	3C273	110	0	1.14	-14	-0.24	1709.16
	159	4	410	49	407	55	2	3C283	126	-4	1.20	-10	0.08	1709.20
	159	6	440	22	487	89	2	3C298	130	4	1.21	-10	0.09	1709.21
	159	16	481	38	476	38	2	3C48	47	24	0.73	37	1.74	1709.18
B10609	160	16	387	14	465	17	3	3C48	48	24	0.74	36	1.48	1709.19
	160	19	423	79	422	76	2	3C147	27	55	0.45	-36	-5.16	1709.46
	160	21	477	46	477	75	3	3C161	34	-50	0.56	-28	-3.90	1709.43
B10610	161	0	448	38	335	32	2	3C216	52	16	0.79	-35	-3.55	1709.41
	161	16	441	21	473	23	3	3C48	49	23	0.75	35	1.61	1709.24
	161	21	496	27	507	36	3	3C161	34	-50	0.56	-28	-3.83	1709.47
B10611	162	1	247	17	256	26	2	3C222	65	-7	0.91	-24	-2.53	1709.29
	162	14	376	23	336	39	2	3C459	89	5	1.04	17	1.42	1709.26
	162	16	416	15	365	37	3	3C48	50	23	0.77	34	1.51	1709.27
	162	21	454	81	487	37	2	3C161	33	-51	0.54	-27	-3.95	1709.50
B10612	163	6	248	9	265	76	2	3C298	126	4	1.20	-11	0.60	1709.22
	163	14	311	52	354	146	2	3C459	90	5	1.04	17	1.52	1709.26
	163	15	387	51	339	45	2	3C48	50	22	0.77	35	1.48	1709.30
B10613	164	14	359	86	405	315	2	3C459	91	5	1.05	17	1.48	1709.32
	164	16	340	9	307	8	3	3C48	51	22	0.78	34	1.35	1709.32
B10614	165	1	431	50	437	52	2	3C237	68	-3	0.93	-20	-1.89	1709.50
	165	15	414	18	454	40	3	3C48	52	21	0.79	34	1.57	1709.38
	165	21	335	33	330	58	2	3C161	32	-54	0.53	-22	-4.34	1709.57
B10615	166	3	309	25	305	25	2	3C273	103	1	1.11	-14	-0.49	1709.42
	166	16	390	95	446	137	2	3C48	53	21	0.80	32	1.44	1709.41
B10616	167	2	306	16	299	14	2	3C273	102	1	1.10	-15	-0.55	1709.46
	167	3	353	9	352	10	2	3C283	119	-4	1.18	-12	-0.04	1709.47
	167	15	418	22	399	15	3	3C48	54	20	0.81	32	1.53	1709.46
	167	16	492	14	438	13	2	3C48	54	20	0.81	32	1.67	1709.48

SOLAR WIND
Interplanetary Scintillations
JUNE 1981

DATE	DOY	UT HR	VMID KM/S	ERR	VPK KM/S	ERR	RATING 1-4	SOURCE	ELONG DEG	LAT DEG	DIST AU	DLON DEG	LAG DAY	ROTATION NUMBER
	167	21	324	16	340	12	2	3C161	31	-55	0.52	-19	-4.23	1709.63
810617	168	3	431	78	393	49	2	3C283	118	-4	1.17	-11	-0.15	1709.54
	168	19	379	22	422	77	2	3C147	26	64	0.44	-14	-3.85	1709.68
	168	21	430	18	414	18	3	3C161	31	-56	0.52	-17	-3.42	1709.69
810618	169	16	440	16	434	16	3	3C48	55	19	0.82	31	1.53	1709.54
	169	21	471	22	446	49	3	3C161	31	-56	0.52	-15	-3.12	1709.73
	169	23	383	45	328	32	2	3C216	45	22	0.71	-41	-4.56	1709.75
810619	170	1	282	16	317	18	2	3C237	63	-4	0.89	-25	-2.66	1709.62
	170	16	355	11	368	11	2	3C48	56	19	0.83	29	1.27	1709.55
	170	18	450	32	379	53	2	3C147	27	65	0.45	-8	-2.92	1709.75
	170	21	396	16	399	39	3	3C161	30	-57	0.50	-13	-3.34	1709.75
	170	22	255	28	238	47	2	3C196	37	34	0.60	-44	-6.31	1709.76
	170	23	296	58	279	25	2	3C216	44	23	0.69	-41	-5.07	1709.76
810620	171	1	342	30	337	40	2	3C237	63	-4	0.89	-26	-2.64	1709.70
	171	16	547	10	544	10	4	3C48	57	19	0.84	30	1.67	1709.64
	171	21	361	25	417	44	2	3C161	30	-57	0.50	-11	-3.41	1709.77
	171	22	219	19	191	41	2	3C196	36	35	0.59	-44	-6.91	1709.78
	171	23	458	45	400	90	2	3C216	44	23	0.69	-43	-4.52	1709.85
810621	172	0	431	22	339	66	2	3C222	56	-9	0.83	-33	-3.26	1709.80
	172	1	346	16	339	35	2	3C237	62	-4	0.88	-27	-2.73	1709.74
	172	2	363	85	334	71	2	3C273	98	1	1.08	-16	-0.81	1709.68
	172	14	541	71	475	19	2	3C459	99	6	1.09	16	1.49	1709.68
	172	15	411	18	439	24	3	3C48	58	18	0.85	29	1.46	1709.64
	172	20	381	27	343	25	3	3C161	30	-58	0.50	-8	-3.07	1709.80
	172	23	318	15	285	14	2	3C216	43	24	0.68	-42	-5.09	1709.85
810622	173	1	576	41	461	32	2	3C237	61	-4	0.87	-28	-2.55	1709.85
	173	2	414	55	404	35	2	3C273	97	1	1.08	-16	-0.93	1709.75
	173	3	454	25	455	32	2	3C283	113	-3	1.15	-12	-0.31	1709.74
	173	6	295	44	252	16	2	3C298	117	5	1.17	-12	0.13	1709.65
	173	16	306	15	349	38	3	3C48	59	18	0.86	28	1.19	1709.63
	173	18	457	149	538	102	2	3C147	27	65	0.45	5	-1.87	1709.82
	173	21	401	20	419	52	2	3C161	30	-58	0.50	-6	-2.82	1709.84
	173	22	265	58	296	87	2	3C196	35	38	0.57	-46	-6.49	1709.89
810623	174	2	356	18	379	17	3	3C273	96	2	1.07	-16	-0.83	1709.76
	174	3	358	69	356	109	2	3C283	113	-3	1.15	-12	-0.20	1709.74
	174	22	505	67	541	72	2	3C196	35	39	0.57	-44	-4.97	1710.00
810624	175	0	444	74	410	88	2	3C222	53	-9	0.80	-35	-3.51	1709.93
	175	1	338	55	421	52	2	3C237	59	-4	0.86	-31	-3.16	1709.86
	175	2	376	17	365	70	2	3C273	95	2	1.07	-15	-0.86	1709.80
	175	3	348	12	352	12	2	3C283	112	-3	1.15	-13	-0.27	1709.77
	175	4	255	33	240	132	2	3C295	88	15	1.03	-10	-0.55	1709.71
	175	5	432	99	388	10	2	3C298	116	5	1.16	-13	-0.29	1709.81
	175	15	395	41	433	47	3	3C48	61	17	0.87	26	1.35	1709.75
810626	177	3	333	13	435	32	2	3C283	110	-3	1.14	-12	-0.21	1709.83
	177	5	380	12	347	31	2	3C298	114	6	1.16	-13	-0.27	1709.86
	177	15	482	16	627	86	2	3C48	62	16	0.88	25	1.37	1709.85
810627	178	0	453	29	489	34	2	3C237	56	-4	0.83	-33	-3.27	1710.03
	178	1	408	67	401	108	2	3C273	92	2	1.05	-16	-1.00	1709.93
	178	3	355	32	390	80	2	3C283	109	-3	1.13	-13	-0.32	1709.88
	178	15	387	32	370	13	2	3C48	63	16	0.89	25	1.33	1709.86
	178	18	383	26	420	31	2	3C147	28	62	0.47	22	-0.92	1709.94
810628	179	15	446	15	455	14	3	3C48	64	15	0.90	24	1.36	1709.92
	179	18	478	77	501	50	2	3C147	28	62	0.47	25	-0.18	1709.99
	179	19	602	27	546	24	2	3C144	13	2	0.22	77	3.42	1709.89
	179	20	329	10	379	51	2	3C161	29	-58	0.48	11	-2.09	1710.00
810629	180	0	439	15	386	47	2	3C237	54	-4	0.81	-35	-3.48	1710.11
	180	4	381	19	366	25	2	3C298	111	6	1.14	-13	-0.34	1709.97
	180	13	303	28	347	17	2	3C459	106	7	1.12	15	1.81	1709.86
	180	15	443	14	444	14	3	3C48	65	15	0.91	22	1.25	1709.96
	180	18	637	57	650	25	2	3C147	29	61	0.48	28	0.56	1710.04
	180	20	370	21	367	20	2	3C161	29	-57	0.48	13	-1.62	1710.04
810630	181	0	363	51	398	43	2	3C237	53	-5	0.80	-37	-3.84	1710.12
	181	1	494	27	493	17	3	3C273	89	2	1.04	-16	-1.11	1710.08

SOLAR WIND
Interplanetary Scintillations
JUNE 1981

DATE	DOY	UT HR	VMID KM/S	ERR	VPK KM/S	ERR	RATING 1-4	SOURCE	ELONG DEG	LAT DEG	DIST AU	DLON DEG	LAG DAY	ROTATION NUMBER
810630	181	2	596	65	627	45	2	3C283	106	-3	1.12	-14	-0.70	1710.08
	181	3	539	74	563	51	3	3C295	85	16	1.02	-10	-0.72	1710.07
	181	5	495	17	476	12	3	3C298	110	6	1.14	-13	-0.50	1710.06
	181	13	468	135	455	96	2	3C459	107	7	1.12	14	1.55	1709.99
	181	15	366	19	414	14	4	3C48	66	15	0.91	21	1.13	1709.96
	181	17	414	22	402	22	3	3C144-	15	2	0.26	76	2.40	1709.95
	181	18	545	40	548	61	2	3C147	29	60	0.48	30	0.45	1710.06
	181	20	360	10	435	29	3	3C161	29	-57	0.48	15	-1.53	1710.07
	181	21	357	57	381	104	2	3C196	31	48	0.52	-44	-5.89	1710.23
	181	22	446	83	438	76	2	3C144+	15	2	0.26	75	2.57	1709.96

VMID IS A MEAN AND VPK IS A MAXIMUM VELOCITY IN THE IPS SCATTERING REGION.
THE REGION'S CENTROID IS SPECIFIED BY LAT, DIST, DLON.
LAG AND ROTATION NUMBER GIVE MAPPING TO EARTH AND SUN AT VMID.
* INDICATES NO ERROR AVAILABLE, SINCE ONLY TWO ANTENNAS WERE OPERATING.

Nort
Pole

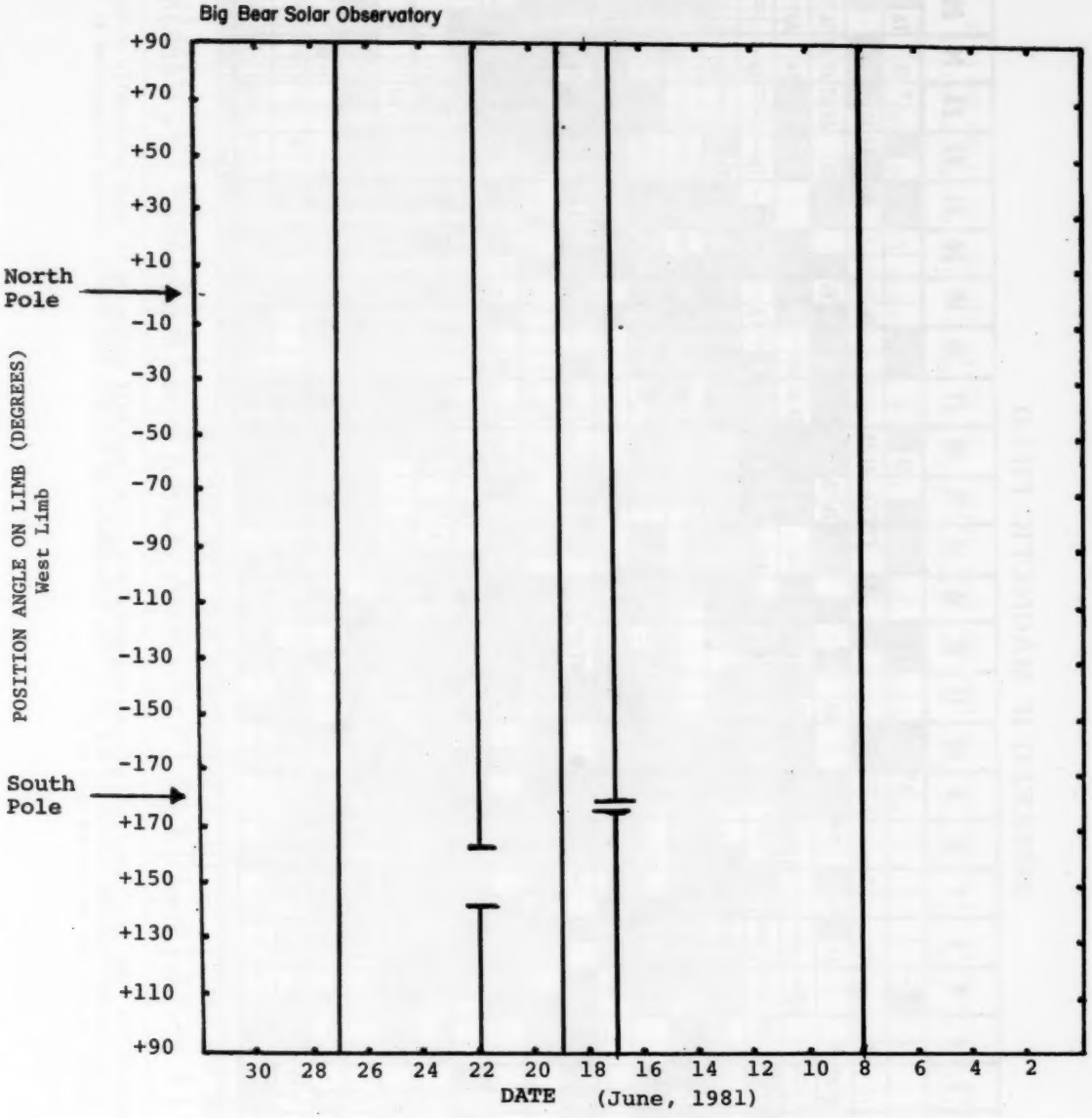
POSITION ANGLE ON LIMB (DEGREES)
West Limb

Sout
Pole

CORONAL HOLES

Helium D3 Chromosphere at Solar Limb

JUNE 1981



INFERRED IP MAGNETIC FIELD

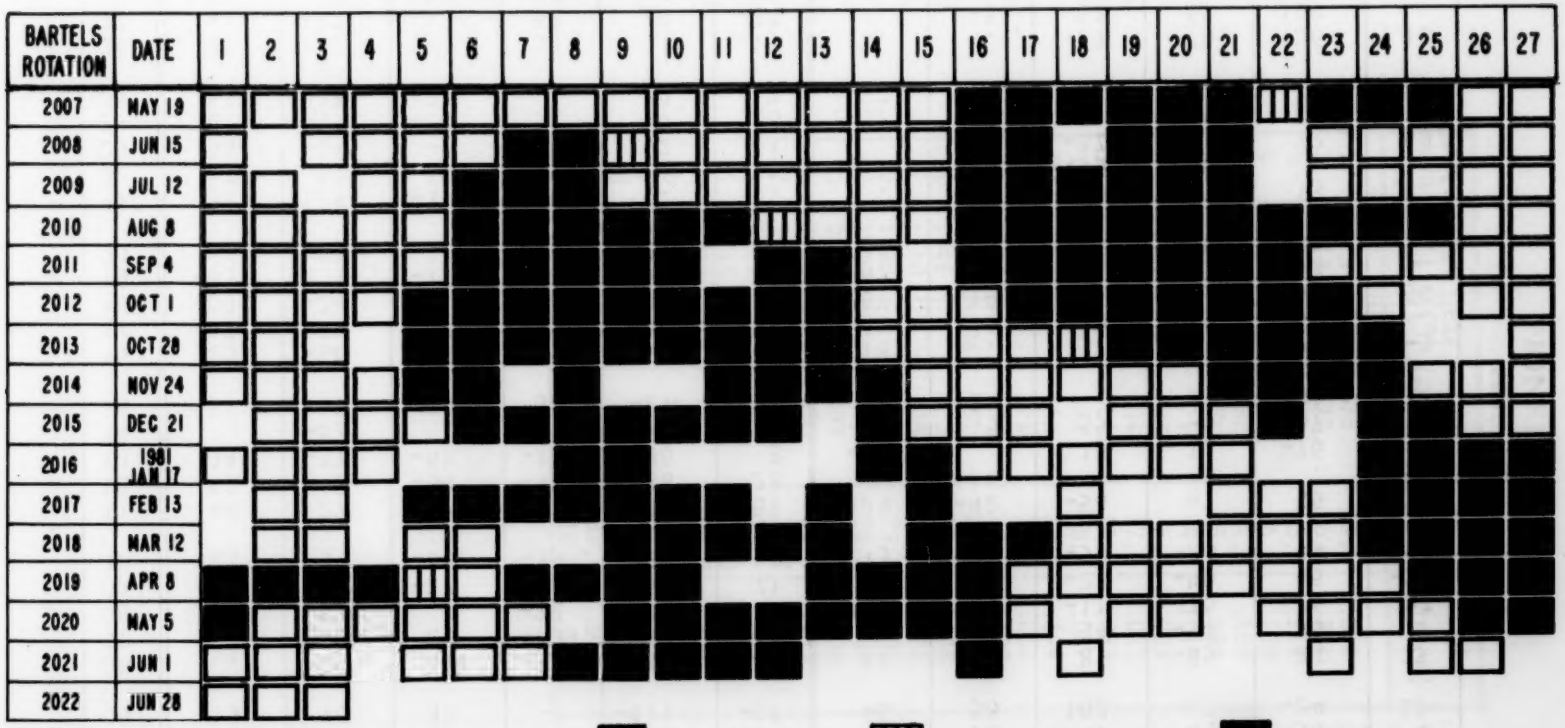
BARTELS ROTATION	DATE	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27
2003	FEB 8		TA			-				A*							TA							*	TA	TA		
2004	MAR 4		AT		TA		AT	-	-	TA		-			T*		AT	AT			TA		AT	AT	TA		TA	-	-
2005	MAR 31		TA	AT	AT		AT	TA	T*			AT				TA	TA				TA		TA	AT	AT	AT	AT	TA	TA		
2006	APR 27		AT			AT	-					TA	AT		TA			TA	AT	AT					TA	AT	*	TA	
2007	MAY 24			AT	AT		*	*	-	-	-	-	TA		AT					*	TA		-	TA		TA		-	TA	
2008	JUN 20		-				AT			-	-				-	-							TA		TA		TA		
2009	JUL 17		-	AT		-					-			TA	TA		-	AT	AT			-	-	-	-	A*	-	-	
2010	AUG 13		AT					-	AT	-						-		-	AT					TA			A*		
2011	SEP 8							TA	AT						TA	TA										TA		
2012	OCT 6							*		TA	TA		AT	A*	A*							TA			TA			
2013	NOV 2	AT					TA	TA				AT	A*								-	TA	-	AT			TA		
2014	NOV 29				-					-	-				TA		TA	TA		AT		-		AT			-	TA		
2015	DEC 26									-	-				-	TA	-	TA	-	-	-	-	-	-	-	AT	AT	-	-	-
2016	JAN 22	TA	-				-	-		AT	TA				TA							-			AT				TA	
2017	FEB 18				AT		TA							TA	TA			*								AT		TA	TA	
2018	MAR 17							AT						-						TA			AT		-	-		TA	AT	
2019	APR 13	TA		-		-					-				TA					*	AT	-		-		-	AT		-	-
2020	MAY 10	-	-	-	-	-	TA	AT	TA		-		TA										*							
2021	JUN 6			*							AT				TA				AT						-	-	-	-	-	-	-

■ = definitely towards the sun □ = definitely away from the sun

T = towards the sun A = away from the sun * = effect doubtful or not discernible - = missing data

The table shows daily inferences of the polarity of the interplanetary magnetic field. The first half of the day is based principally on magnetograms produced by the magnetometer at the Vostok Antarctic Station of the USSR. The magnetometer of the U.S. Air Weather Service now operated at Thule by the Danish Meteorological Institute is used for the second half of the day.

STANFORD MEAN SOLAR MAGNETIC FIELD



POLARITY OF THE MEAN SOLAR MAGNETIC FIELD: ☐ = FIELD >2μT, ▥ = -2μT ≤FIELD ≤2μT, ■ = FIELD <-2μT

No box visible indicates no data available for that day.

NOTE: Data are taken daily at 2000 UT. Dates given are not Bartels Rotation dates. These earlier dates correspond to the occurrence of phenomena on the Sun that affect the Earth during the given Bartels Rotation.

STANFORD MEAN SOLAR MAGNETIC FIELD (MICROTESLA)

	1980						1981					
day	JULY	AUG.	SEPT.	OCT.	NOV.	DEC.	JAN.	FEB.	MARCH	APRIL	MAY	JUNE
01	-51	-5	-19	44	-41	-82	-111	33	.	75	2	16
02	.	.	5	59	-94	.	.	20	54	82	-51	21
03	-25	8	8	53	-120	.	-33	64	.	31	-66	17
04	-23	7	29	26	-123	-100	7	72	.	-23	-56	.
05	-19	10	42	-4	-111	-97	46	58	102	-67	-24	28
06	.	24	42	-36	-84	-67	66	28	81	-85	23	33
07	8	53	23	-62	-99	-16	.	.	39	-97	25	3
08	11	53	9	-73	-107	41	116	.	-11	-76	36	-27
09	13	44	-27	-72	-61	71	49	-6	-28	-40	45	-53
10	23	37	-68	-39	28	77	13	-24	-50	-28	49	-96
11	44	27	-77	-41	27	57	-29	-42	-58	-7	35	-75
12	42	8	-84	-45	38	28	.	-26	.	0	.	-58
13	34	-37	-62	-10	26	3	-39	.	18	13	-76	.
14	.	-63	.	10	-1	-52	-13	15	35	-6	-147	.
15	57	-65	-39	38	-21	-93	8	24	.	-29	-131	.
16	26	-56	-16	20	-50	-86	18	.	37	-61	-94	-3
17	-42	-44	7	-15	-68	-51	62	-8	12	-75	-50	.
18	-69	-24	.	-8	-81	26	67	-19	.	.	-47	50
19	-43	1	-18	-2	-63	37	67	-62	.	.	-53	.
20	5	23	-38	-16	-24	39	37	-65	-41	-85	-41	.
21	32	24	-31	-14	.	.	.	-76	-80	-79	13	.
22	47	11	-15	-17	.	51	.	-70	-119	-86	.	.
23	53	-11	-7	-8	97	41	.	-68	-87	-51	72	59
24	57	-31	-22	31	80	28	-52	.	-81	5	61	.
25	53	-38	-21	.	70	7	-87	-75	.	43	.	29
26	27	-27	8	54	31	-13	.	.	-88	70	126	18
27	-8	-27	18	52	28	-20	.	-8	-52	67	109	.
28	-33	-18	18	48	-3	-42	.	.	-20	84	50	44
29	-42	-14	18	44	-26	-65	.		31	122	24	62
30	-29	-18	25	57	.	-88	-59		45	61	-9	50
31	-6	-10		.		-95	-4		55		4	

DOT SYMBOL ENTRY INDICATES NO DATA AVAILABLE FOR THE DAY.

PIONEER XII

JUNE 1981

DATE Jun '81	TIME (UT)	ESV (°)	U_{H^+} (Km/sec)	N_{H^+} (H^+/CC)	T_{H^+} ($\times 10^6$°K)
1	0929	145.	675.	11.1	0.072
2	1813		577.	6.5	.301
3	0001		556.	5.3	.259
4	1817		531.	6.8	.169
5	0434		482.	14.5	.188
6	0611		484.	35.8	.459
7	0438		529.	4.5	.011
8	1228		434.	6.5	.203
9	1310		404.	37.2	.082
10	1338		304.	14.	.033
11	1450		383.	8.4	.067
12	1319		468.	12.4	.144
13	1406		371.	16.	.062
14	1409		344.	29.7	.137
15	1407	136.	351.	21.1	.125
16	1346		333.	17.6	.088
17	1140		338.	15.2	.025
18	1429		322.	29.8	.067
19	1408		432.	20.3	.188
20	0933		393.	12.4	.066
21	1135		358.	13.2	.049
22	1206		281.	26.2	.026
23	1217		282.	73.	.021
24	1246		316.	74.3	.169
25	1213		439.	14.9	.191
26	1217		502.	13.3	.224
27	1252		386.	21.1	.251
28	1210		382.	18.	.119
29	1315		330.	37.	.051
30	1141		284.	110.8	.023

DOT SYMBOL ENTRY INDICATES NO DATA AVAILABLE FOR THE DAY.

BOULDER GEOMAGNETIC SUBSTORM LOG

JUNE 1981

DATE	ONSET TIME	DIR	COMMENTS
06/01			Field intermittently unsettled.
	1550		Slow onset. SS effct confined to Arctic Village, Norman Wells and College.
06/02			Field intermittently unsettled.
	1415		Weak SS at Fort Smith only.
	1440		Weak SS
06/03			Field intermittently unsettled.
	0635		Weak SS Inuvik to Sachs Harbor.
	1355		Slow onset; several minor particle injections with field recovery near 1900 UT.
06/04			Field slightly unsettled.
06/05			Field slightly unsettled.
06/06	0940		Positive impulse on H component; field unsettled through 1900 UT. Varied spatial and temporal SS activity.
06/07			Field active after 0200 UT.
	0300	East	
	0615	West	
	1855		
	1955		
	2125		Moderate polar cap SS.
06/08			Field intermittently unsettled.
	0010	East	SS localized between Inuvik and Sachs Harbor.
06/09			Field slightly unsettled.
06/10	1015		Weak SS
06/11	0745		Localized SS Norman Wells to Fort Smith to Lynn Lake.
06/12	0925		Localized SS from Fort Smith to Lynn Lake.
06/13	1215		Weak SS from Norman Wells to Fort Smith to Lynn Lake.
06/14	1200		Weak SS
06/15			Field intermittently unsettled.
	0520	East	
	1100	West	
06/16			Field unsettled all day.
	0230	East	Slow onset; several particle injections with strongest at 0300 UT.
	0930	West	
	1350		SS localized vicinity of College.
	1620		Slow onset.
06/17			Field unsettled through 1200 UT; quiet balance of day.
	0725	= center	
	1035		Weak SS
06/18			Field unsettled all day but no distinctive SS activity.
06/19			Field unsettled all day.
	0855	West	
	1140	West	
06/20			Field intermittently unsettled.
	0815	West	Several minor injections with recovery near 1030 UT.
	1355		Weak SS
06/21			Field intermittently unsettled with no distinctive SS activity.
06/22			Field quiet. Became slightly unsettled after 1800 UT.
06/23			Field slightly unsettled.
06/24			Field unsettled after 0700 UT.
	0755		Several minor injections with recovery near 1100 UT.
	1155		SS localized near College.
06/25	0915	West	
	1240	West	Moderate SS; several injections with recovery near 1600 UT.
	1610		
06/26			Field intermittently unsettled.
	0950	West	Moderate SS
	1235	West	
06/27			Field intermittently unsettled.
	0740	West	
06/28			Field intermittently unsettled.
	0610	centered	
06/29	0611	SSC	Magnetic storm conditions existed through 1600 UT.
06/30			Field intermittently unsettled.

SGD 443 Part 1 (Prompt)

MAY 1981 DATA

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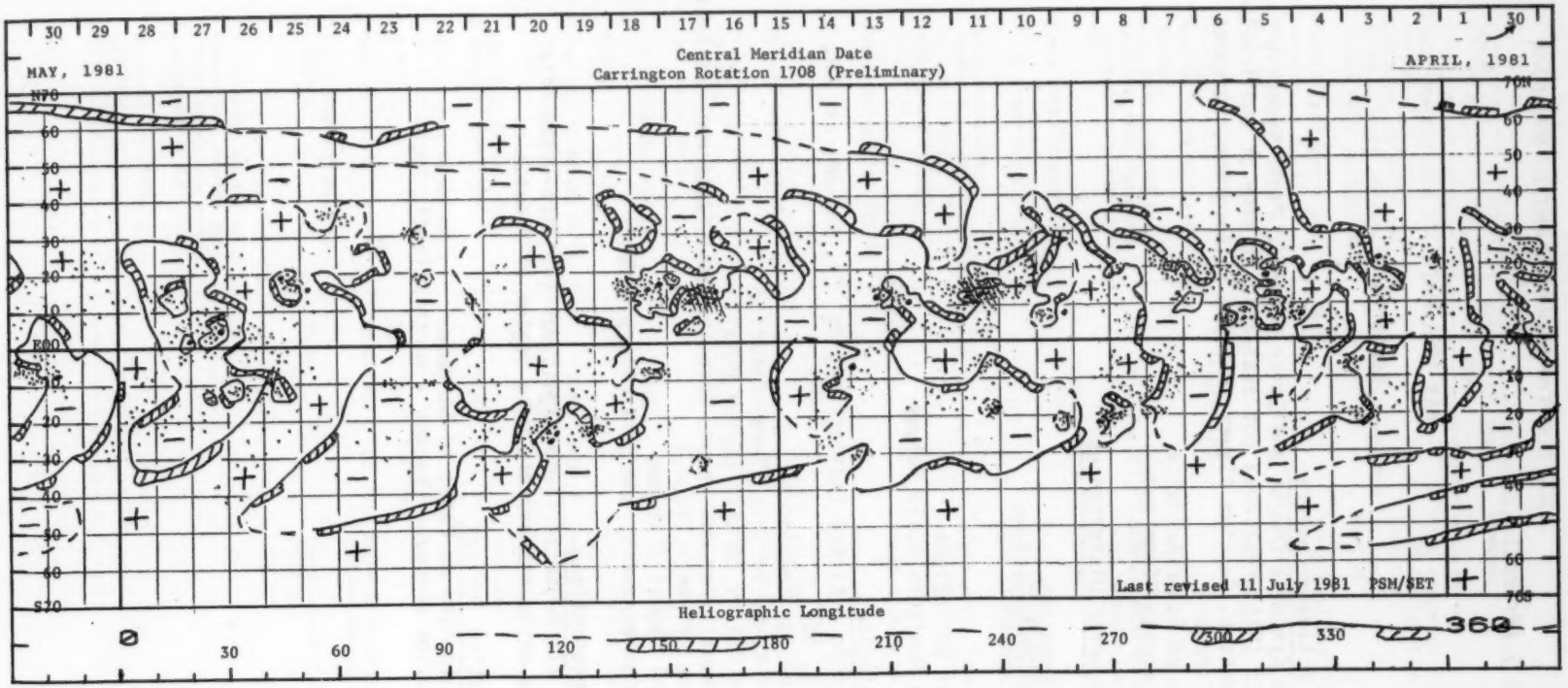
Hα SYNOPTIC CHART

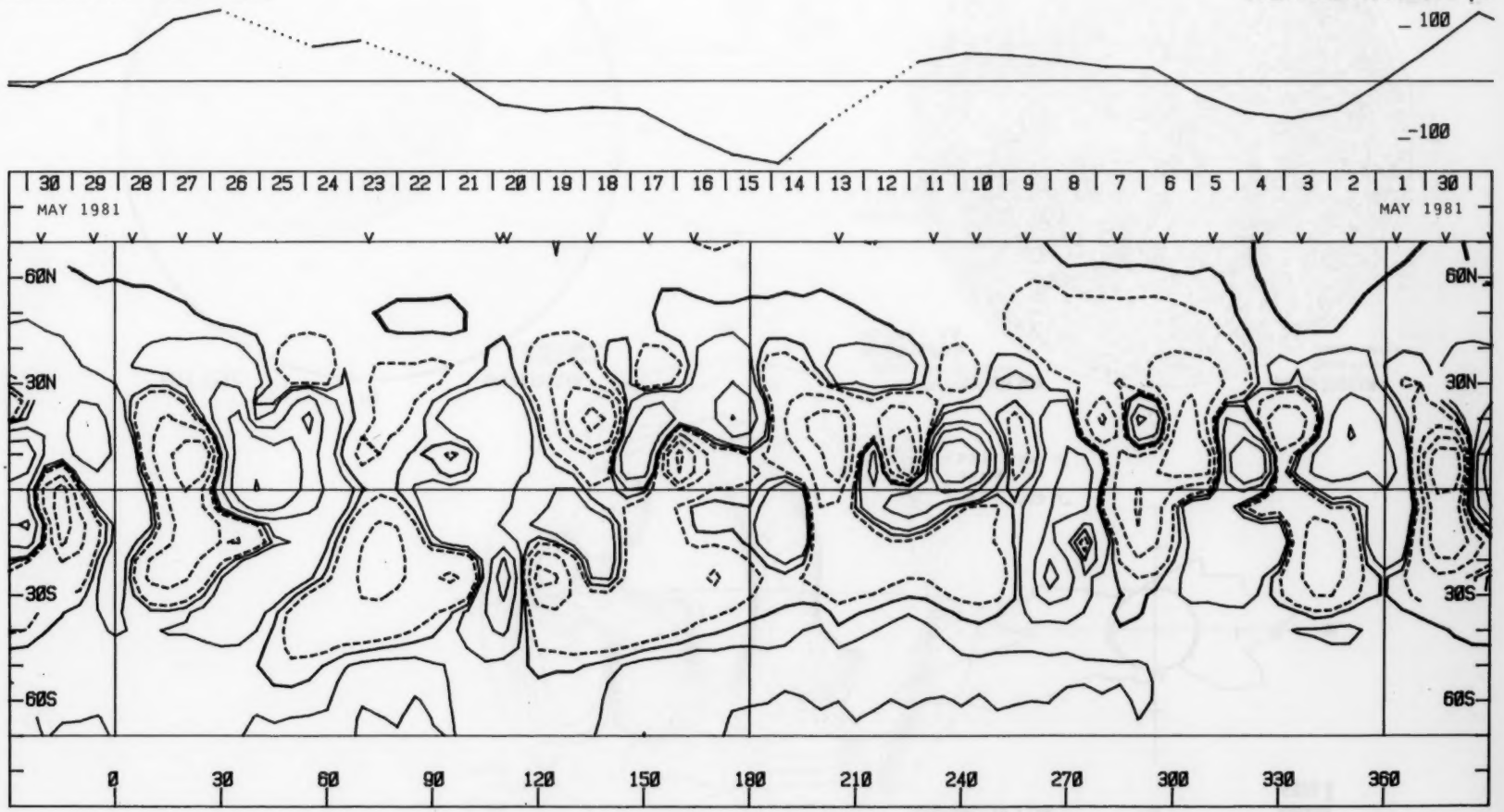
CARRINGTON ROTATION 1708 (PRELIMINARY)



SOLAR MAGNETIC FIELD SYNOPTIC CHART
CARRINGTON ROTATION 1708

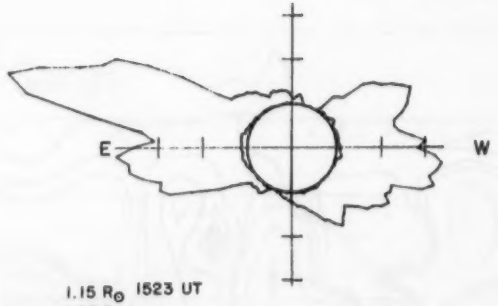
Stanford Solar Observatory

0,±100,200,500... μT



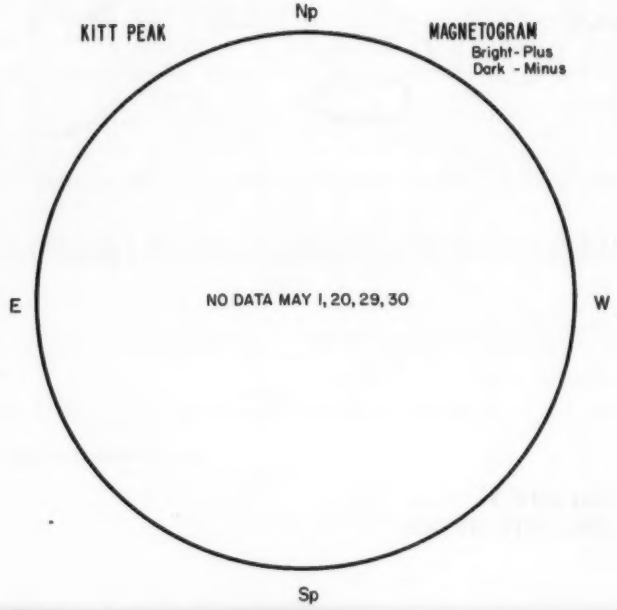
MAY 1, 1981 (P=-24.19, B_o=-4.15, L_o=12.76)

SACRAMENTO PEAK Np CORONA 5303 Å



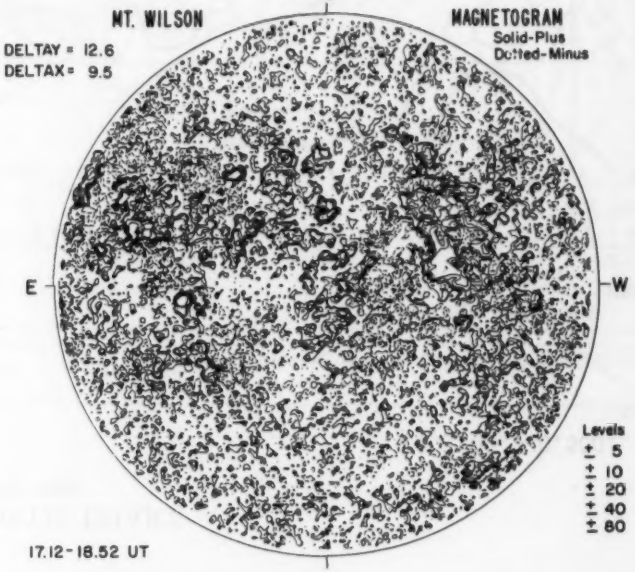
1.15 $R_\odot$ 1523 UT
1.35 $R_\odot$
1.55 $R_\odot$ 1542 UT

KITT PEAK Np MAGNETOGRAM Bright-Plus Dark-Minus



Sp Np MT. WILSON MAGNETOGRAM Solid-Plus Dotted-Minus

DELTAY = 12.6
DELTAX = 9.5



17.12-18.52 UT

Sp

01 BOULDER Np Hα SAN FERNANDO Np SUNSPOTS HALE OBSERVATORIES Np CALCIUM REPORT

17.12-18.52 UT

Sp

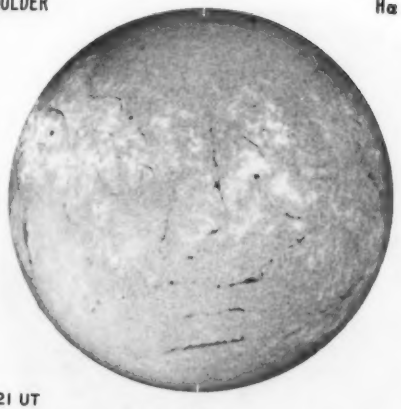
Sp

± 80

01

BOULDER

Np



E

W

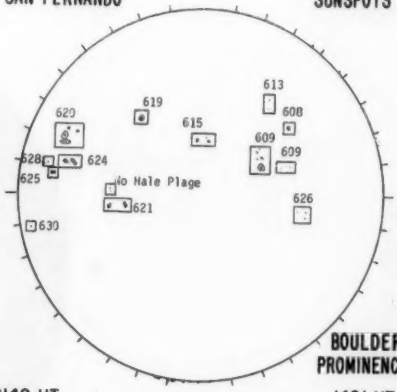
1421 UT

Sp

Hα

SAN FERNANDO

Np



E

W E

2140 UT

Sp

SUNSPOTS

HALE OBSERVATORIES

BOULDER PROMINENCES

1421 UT

1802 UT

Np

Sp

CALCIUM REPORT

W

6000	JA

03- 0400-2.5
07- 0100-2.5
08- 1200-3.0
09- 4200-3.5
10- 0700-3.0
13- 0200-3.0
14- 0100-2.5
15- 0400-3.0
16- 0300-3.0
17- 0600-3.0
19- 0500-3.0
20- 1700-3.5
21- 0400-3.0
22- 0400-3.0
23- 0900-3.0
24- 1200-3.5
25- 0400-3.0
26- 0200-3.0
27- 0700-3.0
28- 0500-3.0

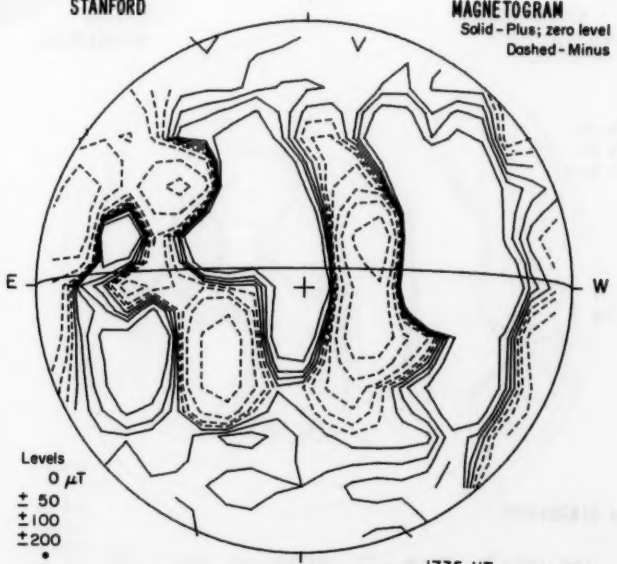
STANFORD

Np

MAGNETOGRAM

Solid - Plus; zero level

Dashed - Minus



E

W

Levels

0 μT

± 50

±100

±200

1735 UT

Sp

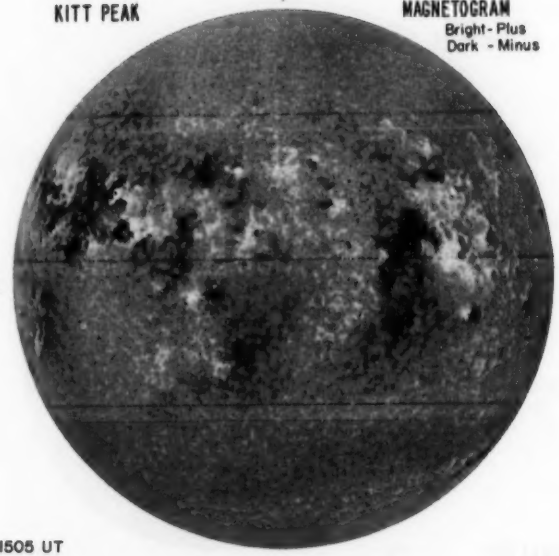
MAY 2, 1981 (P=-24.01, B_o=-4.05, L_o=359.54)

SACRAMENTO PEAK Np CORONA 5303 Å

E NO DATA MAY 2,10,12,20,23,24,26,27,30 W

1.15 $R_\odot$
1.35 $R_\odot$
1.55 $R_\odot$

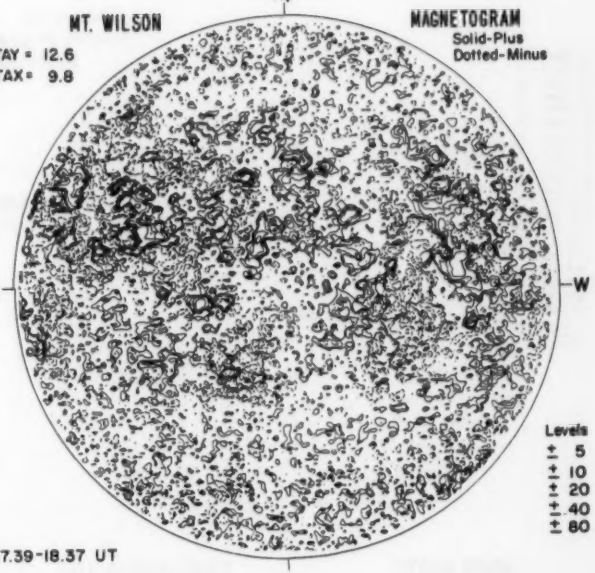
KITT PEAK Np MAGNETOGRAM Bright-Plus Dark-Minus



1505 UT

Sp Np MT. WILSON MAGNETOGRAM Solid-Plus Dotted-Minus

DELTAY = 12.6
DELTAX = 9.8



17.39-18.37 UT

02

BOULDER Np Hα BOULDER Np SUNSPOTS HALE OBSERVATORIES Np CALCIUM REPORT

1505 UT

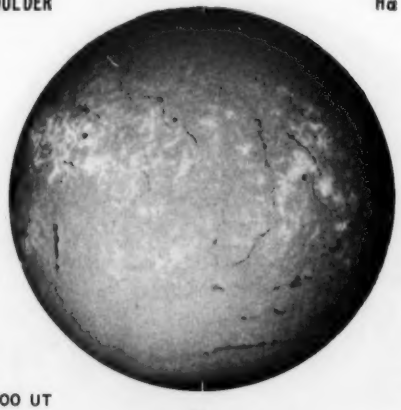
Sp

17.39-18.37 UT

Sp

02

BOULDER Np Hα

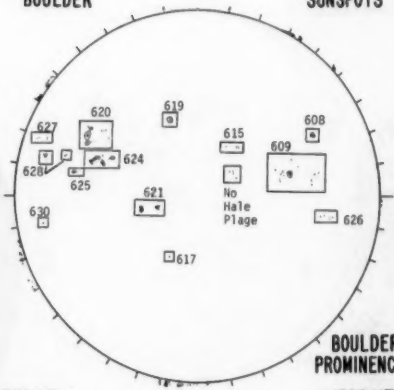


E W

1700 UT

Sp

BOULDER Np SUNSPOTS



E W

1720 UT

Sp

BOULDER PROMINENCES

1700 UT

HALE OBSERVATORIES Np

E W

1745 UT

Sp

CALCIUM REPORT

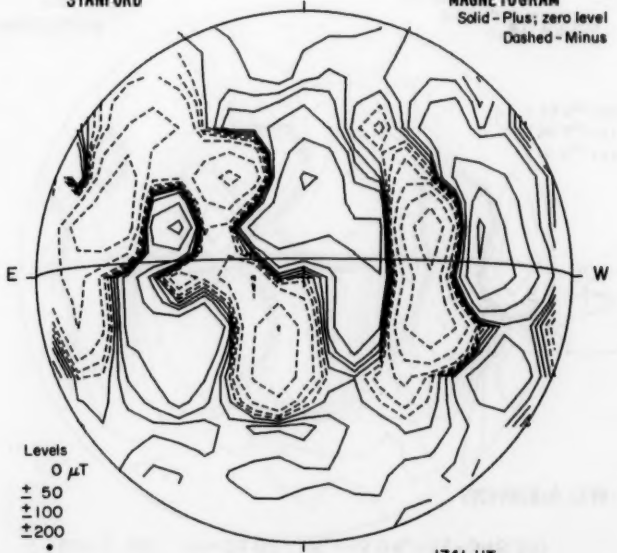
	GOOD	JA

08- 0900-3.0
09- 3900-3.5
10- 0600-3.0
13- 0100-3.0
15- 0200-3.0
16- 0300-2.5
17- 0600-2.5
19- 0800-3.0
20- 2200-3.5
21- 0400-3.0
22- 0400-3.0
23- 0500-3.0
24- 1200-3.5
25- 0500-3.5
26- 0400-3.0
27- 1100-3.5
28- 1200-3.0
29- 0400-2.5
30- 0300-2.5
31- 0200-3.0

STANFORD Np MAGNETOGRAM

Solid - Plus; zero level

Dashed - Minus



E W

Levels

0 μT

± 50

±100

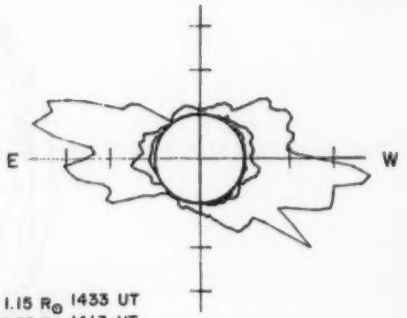
±200

1741 UT

Sp

MAY 3, 1981 (P=23.82, B_o=-3.94, L_o=346.33)

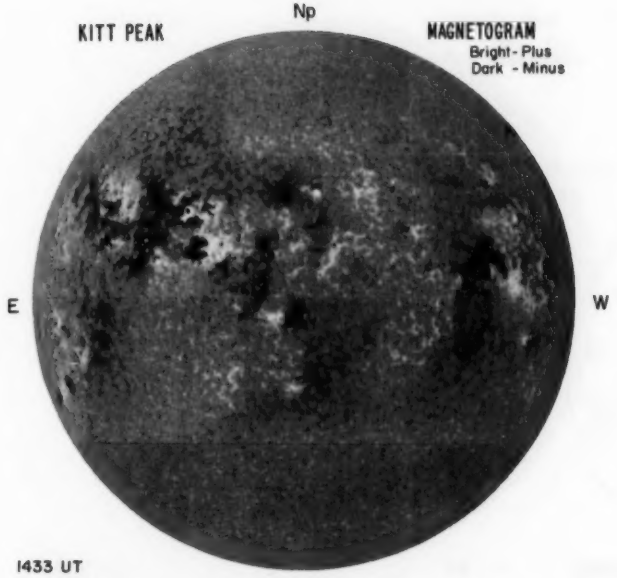
SACRAMENTO PEAK Np CORONA 5303 Å



1.15 $R_\odot$ 1433 UT
1.35 $R_\odot$ 1413 UT
1.55 $R_\odot$ 1422 UT

Sp

KITT PEAK Np MAGNETOGRAM Bright-Plus Dark-Minus



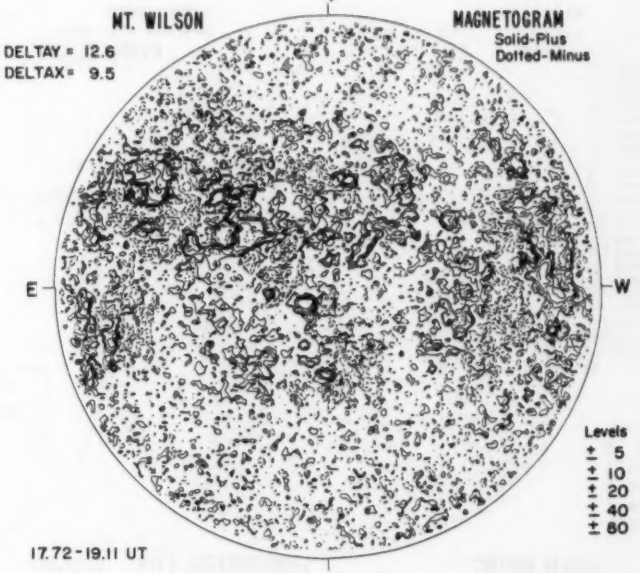
1433 UT

Sp

Np

MT. WILSON MAGNETOGRAM Solid-Plus Dotted-Minus

DELTAY = 12.6
DELTAX = 9.5



17.72-19.11 UT

Sp

03

BOULDER Np Hα SAN FERNANDO Np SUNSPOTS HALE OBSERVATORIES Np CALCIUM REPORT

1433 UT

Sp

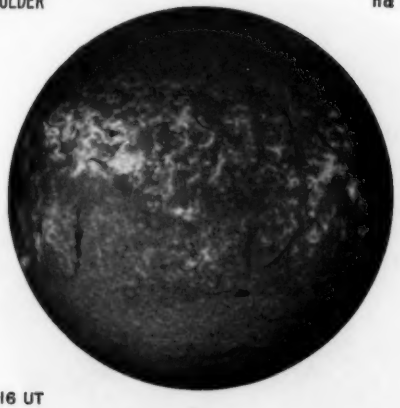
17.72-19.11 UT

Sp

03

BOULDER

Np



E

W

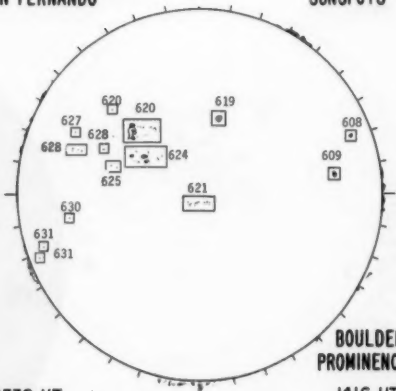
1416 UT

Sp

Hα

SAN FERNANDO

Np



E

W

2330 UT

Sp

SUNSPOTS

BOULDER PROMINENCES

1416 UT

HALE OBSERVATORIES

Np

E

W

1856 UT

Sp

CALCIUM REPORT

G000	JA
08-	0600-3.0
09-	3500-3.5
10-	0600-3.0
13-	0200-3.0
15-	0100-3.0
16-	0300-3.0
17-	0500-2.5
19-	0700-3.0
20-	3400-3.5
21-	0400-3.0
22-	0300-2.5
23-	0400-3.0
24-	1800-4.0
25-	0500-3.5
26-	0300-3.0
27-	2000-3.5
28-	0600-3.0
29-	0500-2.5
30-	0600-3.0
31-	0400-3.0

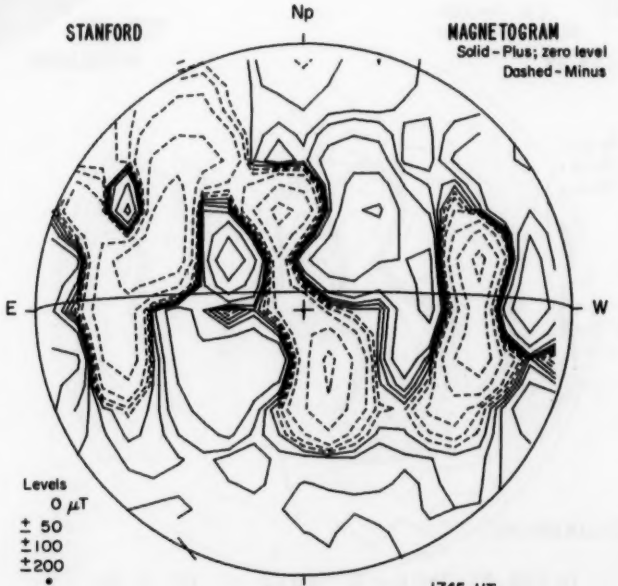
STANFORD

Np

MAGNETOGRAM

Solid - Plus; zero level

Dashed - Minus



E

W

Levels

0 μT

± 50

±100

±200

•

•

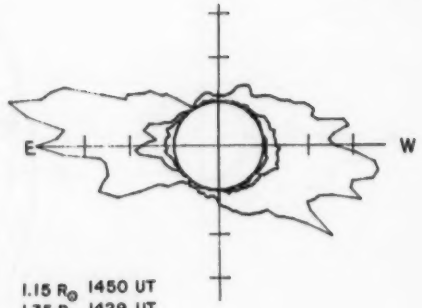
•

1745 UT

Sp

MAY 4, 1981 (P=-23.63, B_o=-3.84, L_o=333.11)

SACRAMENTO PEAK Np CORONA 5303 Å



1.15 $R_\odot$ 1450 UT
1.35 $R_\odot$ 1429 UT
1.55 $R_\odot$ 1440 UT

Sp

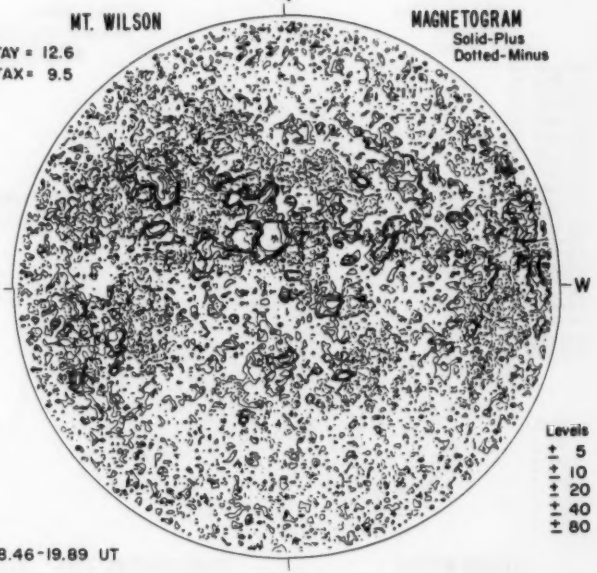
KITT PEAK Np MAGNETOGRAM Bright-Plus Dark-Minus

1508 UT

Sp

MT. WILSON Np MAGNETOGRAM Solid-Plus Dotted-Minus

DELTAY = 12.6
DELTAX = 9.5



18.46-19.89 UT

Sp

04

SACRAMENTO PEAK Np Hα SAN FERNANDO Np SUNSPOTS HALE OBSERVATORIES Np CALCIUM REPORT

1508 UT

Sp

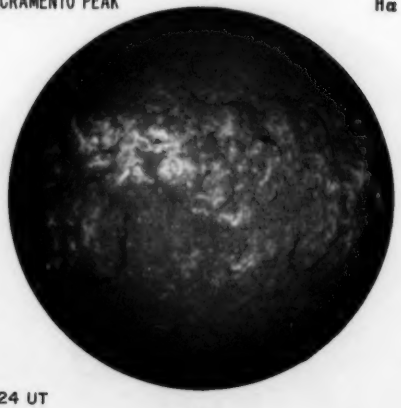
18.46-19.89 UT

Sp

± 80

04

SACRAMENTO PEAK Np Hα

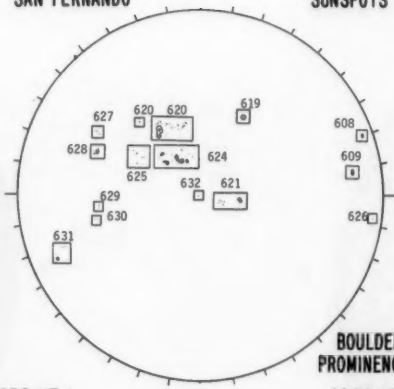


E W

1524 UT

Sp

SAN FERNANDO Np SUNSPOTS



E W

1650 UT

Sp

BOULDER PROMINENCES

1444 UT

HALE OBSERVATORIES Np CALCIUM REPORT

E W

1834 UT

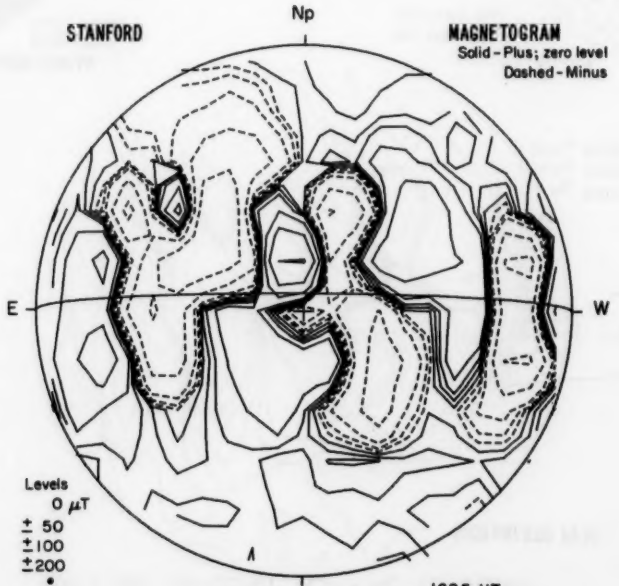
Sp

	GOOD	JA
08-	0500	3.0
09-	2600	3.5
10-	0500	2.5
13-	0200	3.0
15-	0100	3.0
16-	0400	3.0
17-	0400	3.0
19-	0700	3.0
20-	3100	3.5
21-	0600	3.0
23-	0800	3.0
24-	2200	4.0
25-	0700	3.5
26-	0300	3.0
27-	2000	3.5
28-	1200	3.0
29-	0500	2.5
30-	0600	3.0
31-	0500	3.0
32-	0100	2.0
33-	0200	2.5

STANFORD Np MAGNETOGRAM

Solid - Plus; zero level

Dashed - Minus



E W

Levels

0 μT

± 50

±100

±200

•

•

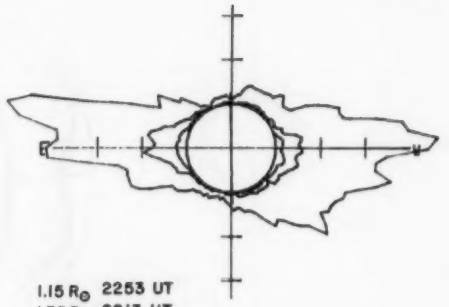
•

1625 UT

Sp

MAY 5, 1981 (P=-23.43, B_o=-3.74, L_o=319.89)

SACRAMENTO PEAK Np CORONA 5303 Å



1.15 $R_\odot$ 2253 UT
1.35 $R_\odot$ 2213 UT
1.55 $R_\odot$ 2243 UT

Sp

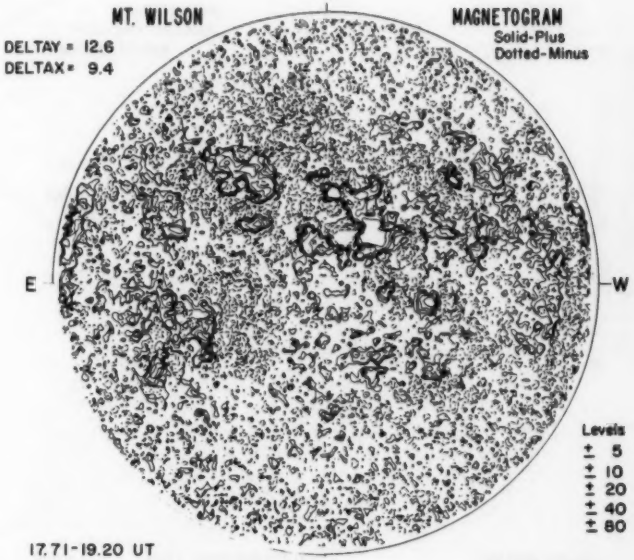
KITT PEAK Np MAGNETOGRAM Bright-Plus Dark-Minus

1346 UT

Sp

MT. WILSON Np MAGNETOGRAM Solid-Plus Dotted-Minus

DELTAY = 12.6
DELTAX = 9.4



17.71-19.20 UT

Sp

05

BOULDER Np Hα SAN FERNANDO Np SUNSPOTS HALE OBSERVATORIES Np CALCIUM REPORT

1346 UT

Sp

17.71-19.20 UT

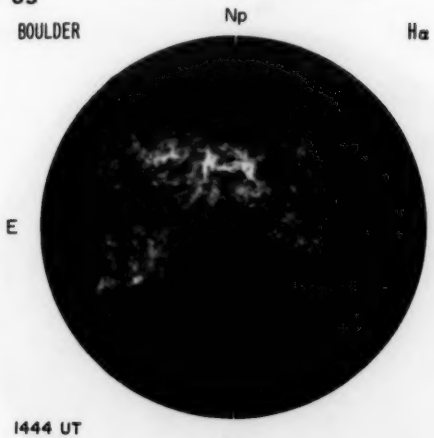
Sp

± 50

05

BOULDER

Np



E

W

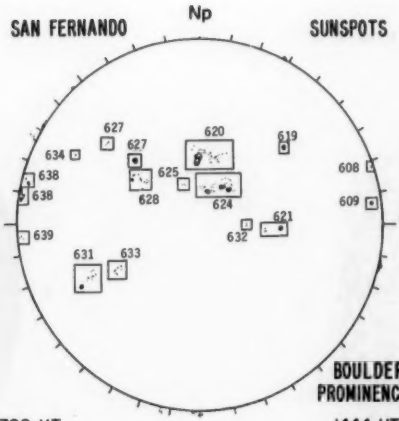
1444 UT

Sp

Hα

SAN FERNANDO

Np



E

W

1700 UT

Sp

SUNSPOTS

HALE OBSERVATORIES

Np

BOULDER PROMINENCES

E

W

1444 UT

Sp

CALCIUM REPORT

NO DATA MAY 5, 11, 18, 20, 25, 26

E

W

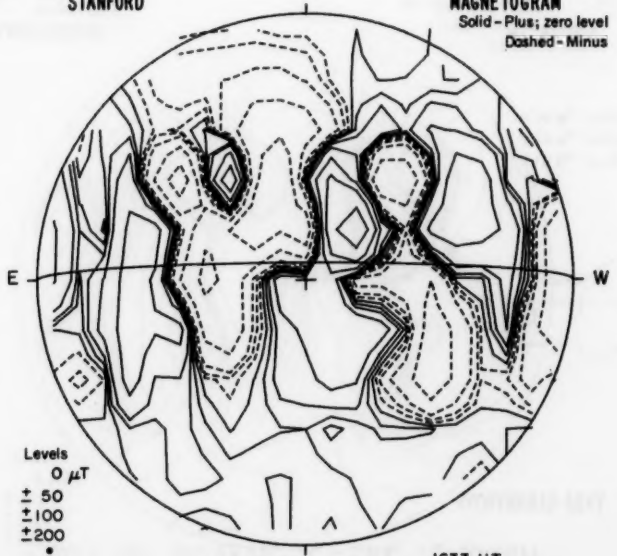
STANFORD

Np

MAGNETOGRAM

Solid - Plus; zero level

Dashed - Minus



E

W

Levels

0 μT

± 50

±100

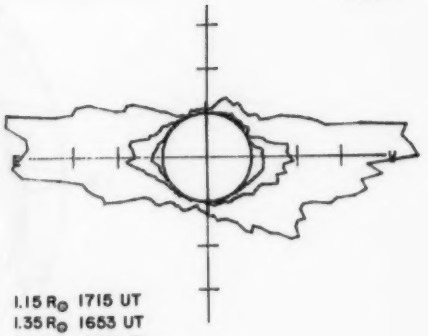
±200

1633 UT

Sp

MAY 6, 1981 (P=-23.22, B_o=-3.63, L_o=306.67)

SACRAMENTO PEAK Np CORONA 5303 Å



1.15 $R_\odot$ 1715 UT
1.35 $R_\odot$ 1653 UT
1.55 $R_\odot$ 1703 UT

Sp

KITT PEAK Np MAGNETOGRAM Bright-Plus Dark-Minus

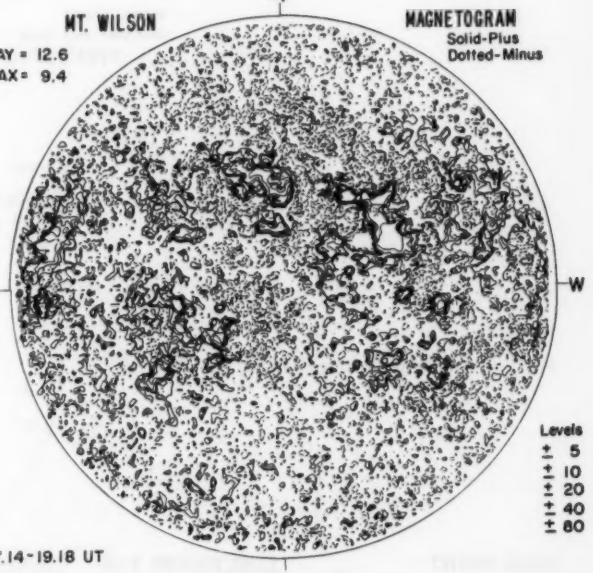
1412 UT

Sp

Np

MT. WILSON MAGNETOGRAM Solid-Plus Dotted-Minus

DELTAY = 12.6
DELTAX = 9.4



17.14-19.18 UT

Sp

06

SACRAMENTO PEAK Np Hα SAN FERNANDO Np SUNSPOTS HALE OBSERVATORIES Np CALCIUM REPORT

1412 UT

Sp

17.14-19.18 UT

Sp

06

SACRAMENTO PEAK Hα

Np

E W

1651 UT

Sp

SAN FERNANDO

Np

638 638 639 635 631 633 627 628 620 625 624 619 621

E W

1700 UT

Sp

SUNSPOTS

BOULDER PROMINENCES

NO DATA

HALE OBSERVATORIES

Np

E W

1828 UT

Sp

CALCIUM REPORT

	GOOD	JA

10- 0200-3.0
16- 0100-2.5
17- 0300-2.5
19- 0600-3.0
20- 3200-3.5
21- 0300-3.0
23- 0400-3.0
24- 2600-4.0
25- 0900-3.5
27- 2900-3.5
28- 0500-3.0
29- 0300-2.5
30- 0500-3.0
31- 1000-3.5
32- 0100-3.0
33- 0200-3.0
34- 0200-2.5
35- 0300-3.5
36- 0100-2.5
37- 0400-2.5
38- 1900-3.5
39- 0700-3.5

STANFORD

Np

MAGNETOGRAM

Solid - Plus; zero level

Dashed - Minus

E W

Levels

0 μT

± 50

±100

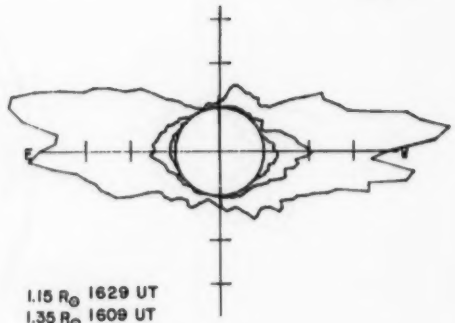
±200

1618 UT

Sp

MAY 7, 1981 (P=-23.00, B_o=-3.52, L_o=293.45)

SACRAMENTO PEAK Np CORONA 5303 Å



1.15 $R_\odot$ 1629 UT
1.35 $R_\odot$ 1609 UT
1.55 $R_\odot$ 1618 UT

Sp

KITT PEAK Np MAGNETOGRAM Bright-Plus Dark-Minus

E W

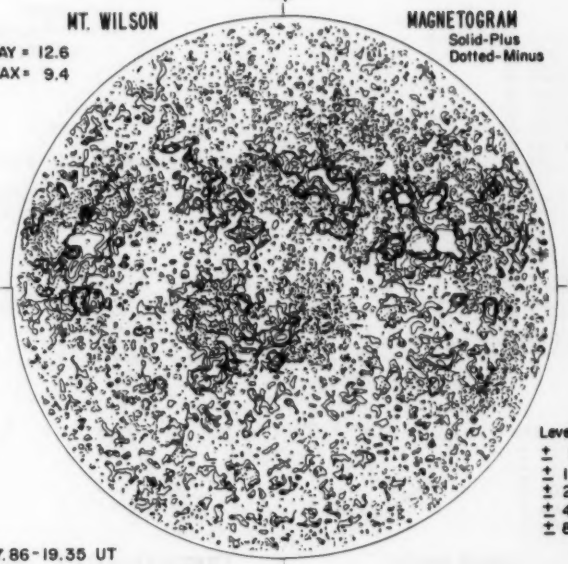
1341 UT

Sp

Np

MT. WILSON MAGNETOGRAM Solid-Plus Dotted-Minus

DELTAY = 12.6
DELTAX = 9.4



E W

Levels
± 5
± 10
± 20
± 40
± 80

17.86-19.35 UT

Sp

07

BOULDER Np Hα SAN FERNANDO Np SUNSPOTS HALE OBSERVATORIES Np CALCIUM REPORT

1341 UT

Sp

17.86-19.35 UT

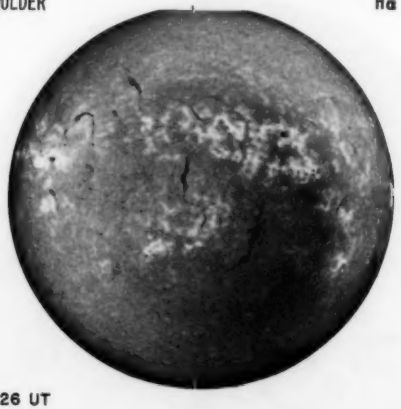
Sp

07

BOULDER

Np

Hα



E

W

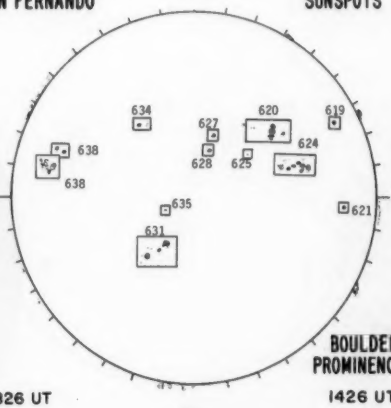
1426 UT

Sp

SAN FERNANDO

Np

SUNSPOTS



E

W

1826 UT

Sp

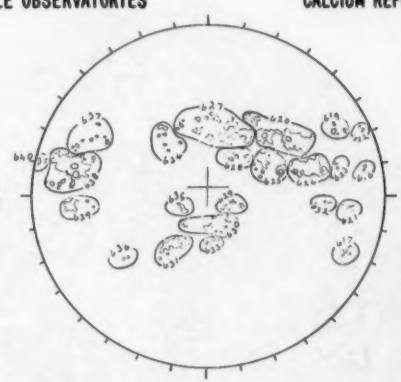
BOULDER PROMINENCES

1426 UT

HALE OBSERVATORIES

Np

CALCIUM REPORT



E

W

1859 UT

Sp

GOOD	JA

19- 0300-3.0
20- 3500-3.5
21- 0400-3.0
23- 0100-3.0
24- 2600-4.0
25- 1100-3.5
27- 2600-3.5
28- 0600-3.5
29- 0300-2.5
30- 0600-3.0
31- 1000-3.0
32- 0200-3.0
33- 0200-3.0
34- 0400-3.0
35- 0300-3.0
37- 0500-2.5
38- 4300-3.5
39- 0800-3.5
40- 0300-3.0

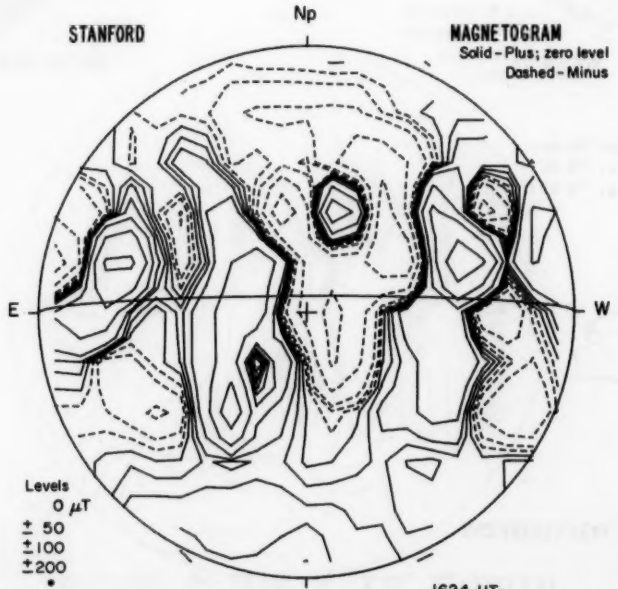
STANFORD

Np

MAGNETOGRAM

Solid - Plus; zero level

Dashed - Minus



E

W

Levels

0 μT

± 50

±100

±200

•

•

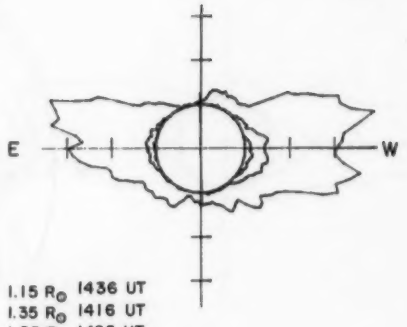
•

1624 UT

Sp

MAY 8, 1981 (P=-22.78, B_o=-3.42, L_o=280.23)

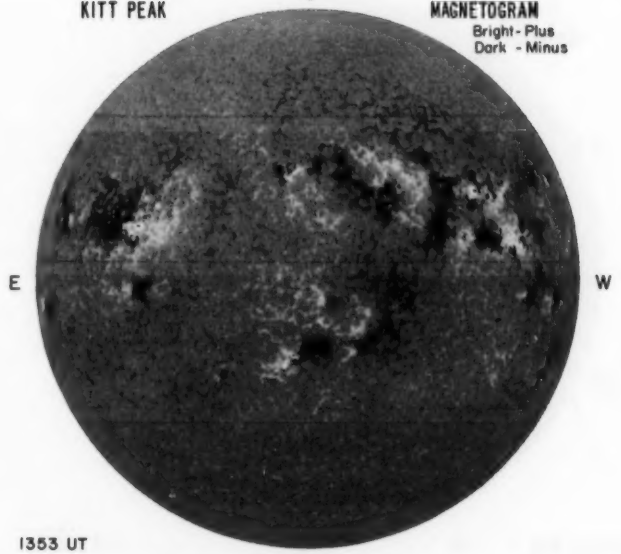
SACRAMENTO PEAK Np CORONA 5303 Å



1.15 $R_\odot$ 1436 UT
1.35 $R_\odot$ 1416 UT
1.55 $R_\odot$ 1425 UT

Sp

KITT PEAK Np MAGNETOGRAM Bright-Plus Dark-Minus



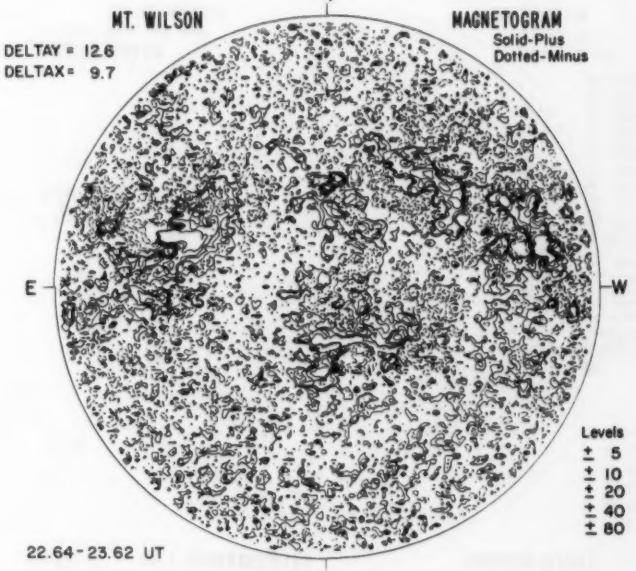
1353 UT

Sp

Np

MT. WILSON MAGNETOGRAM Solid-Plus Dotted-Minus

DELTAY = 12.6
DELTAX = 9.7



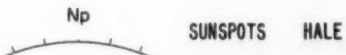
22.64-23.62 UT

Sp

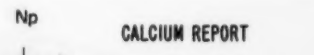
08

BOULDER Np Hα

SAN FERNANDO Np



SUNSPOTS HALE OBSERVATORIES Np



CALCIUM REPORT

1353 UT

Sp

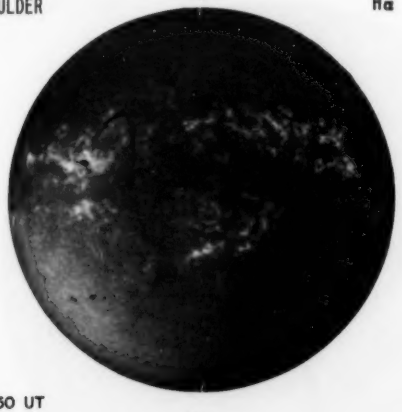
22.64-23.62 UT

Sp

08

BOULDER

Np



E

W

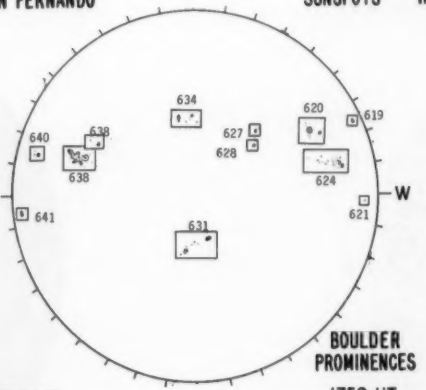
1750 UT

Sp

Hα

SAN FERNANDO

Np



E

W

1800 UT

Sp

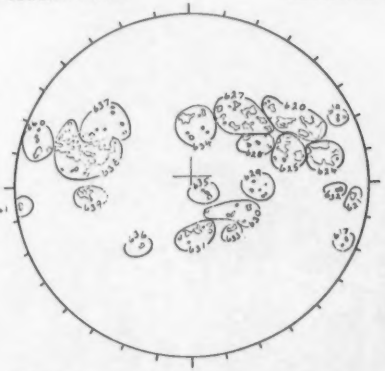
SUNSPOTS

BOULDER PROMINENCES

1750 UT

HALE OBSERVATORIES

Np



E

W

1922 UT

Sp

CALCIUM REPORT

	FAIR	JA
19-	0300	2.5
20-	2800	3.5
21-	0400	3.0
24-	2700	3.5
25-	1200	3.0
27-	1900	3.5
28-	0500	3.0
29-	0300	2.5
30-	0600	3.0
31-	0700	3.0
32-	0200	3.0
33-	0200	3.0
34-	0800	3.0
35-	0200	2.5
37-	0500	2.5
38-	4200	3.5
39-	0500	3.0
40-	0700	3.5
41-	0400	2.5

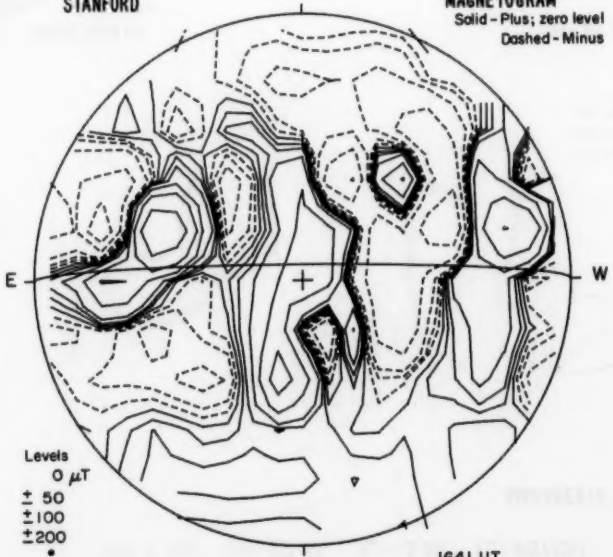
STANFORD

Np

MAGNETOGRAM

Solid - Plus; zero level

Dashed - Minus



E

W

Levels

0 μT

± 50

±100

±200

•

•

•

1641 UT

Sp

MAY 9, 1981 (P=-22.55, B_o=-3.31, L_o=267.01)

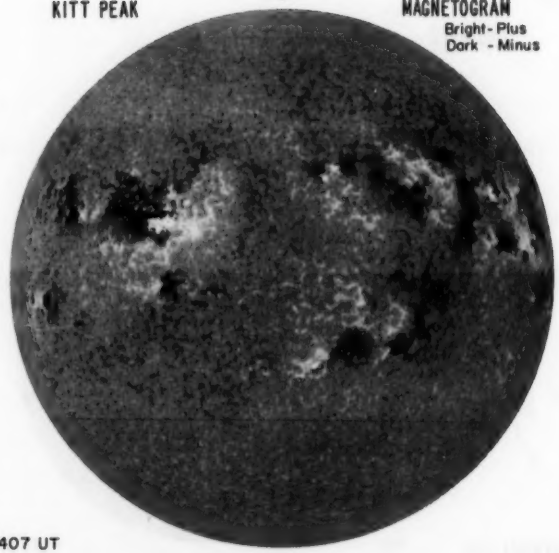
SACRAMENTO PEAK Np CORONA 5303 Å

E W

1.15 $R_\odot$ 1446 UT
1.35 $R_\odot$ 1425 UT
1.55 $R_\odot$ 1434 UT

Sp

KITT PEAK Np MAGNETOGRAM Bright-Plus Dark-Minus



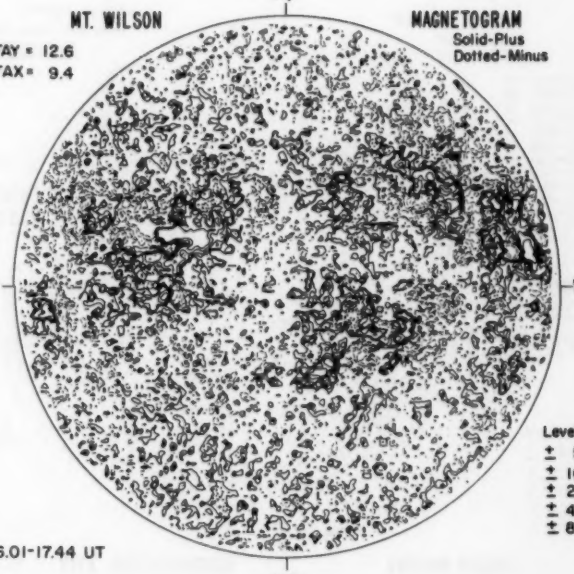
E W

1407 UT

Sp

MT. WILSON Np MAGNETOGRAM Solid-Plus Dotted-Minus

DELTAY = 12.6
DELTAX = 9.4



E W

Levels
± 5
± 10
± 20
± 40
± 80

16.01-17.44 UT

Sp

09

SACRAMENTO PEAK Np Hα SAN FERNANDO Np SUNSPOTS HALE OBSERVATORIES Np CALCIUM REPORT

1407 UT

Sp

16.01-17.44 UT

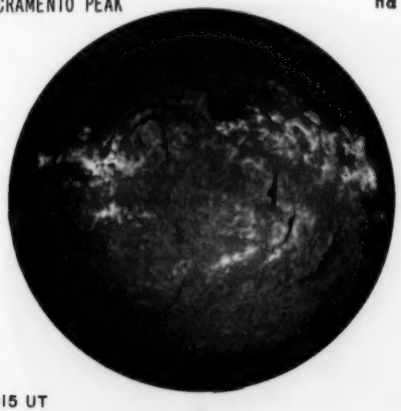
Sp

09

SACRAMENTO PEAK

Np

Hα



E

W

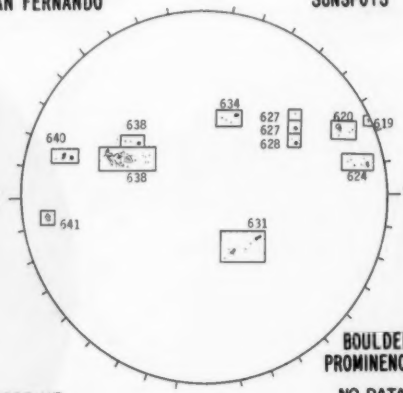
1515 UT

Sp

SAN FERNANDO

Np

SUNSPOTS



E

W

1605 UT

Sp

BOULDER PROMINENCES

NO DATA

HALE OBSERVATORIES

Np

E

W

1700 UT

Sp

CALCIUM REPORT

GOOD	JA

20- 2700-3.5
21- 0200-2.5
24- 2500-3.5
25- 0900-3.0
27- 1600-3.0
28- 0300-3.0
30- 0600-2.5
31- 0700-3.0
32- 0100-2.5
33- 0100-3.0
34- 0500-3.0
35- 0200-2.5
37- 0500-2.5
38- 6200-4.0
39- 0400-3.5
40- 0800-3.0

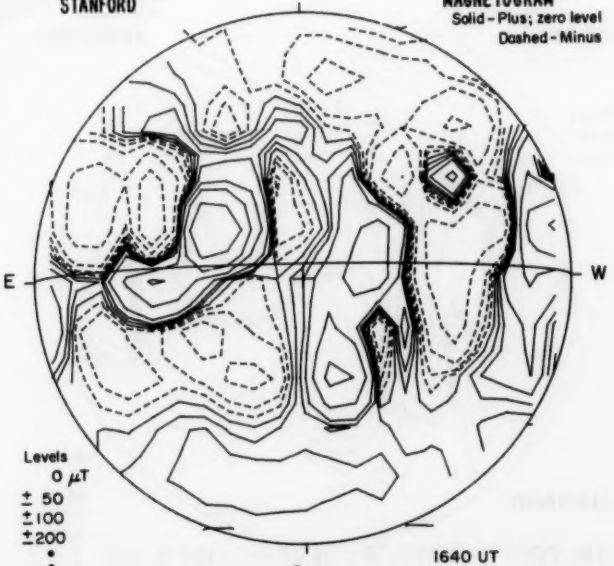
STANFORD

Np

MAGNETOGRAM

Solid - Plus; zero level

Dashed - Minus



E

W

Levels

0 μT

± 50

±100

±200

1640 UT

Sp

MAY 10, 1981 (P=-22.31, B_o=-3.20, L_o=253.79)

SACRAMENTO PEAK Np CORONA 5303 Å

E NO DATA W

1.15 $R_\odot$
1.35 $R_\odot$
1.55 $R_\odot$

KITT PEAK Np MAGNETOGRAM Bright-Plus Dark-Minus

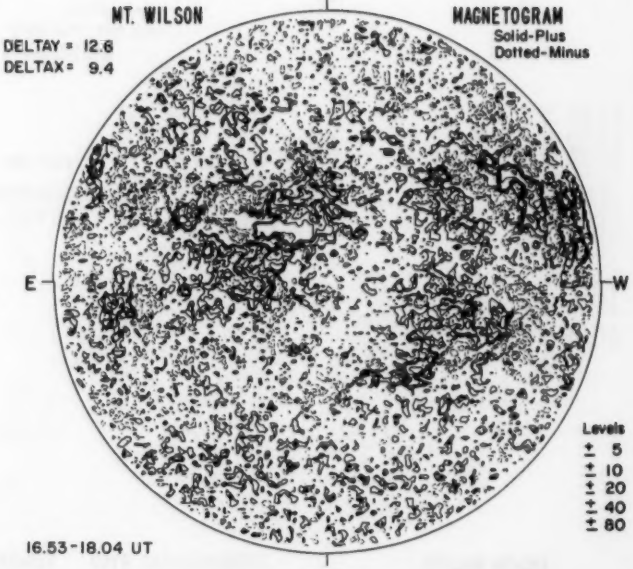
E W

1419 UT

Sp

Sp Np MT. WILSON MAGNETOGRAM Solid-Plus Dotted-Minus

DELTAY = 12.6
DELTAX = 9.4



E W

Levels ± 5 ± 10 ± 20 ± 40 ± 80

16.53-18.04 UT

Sp

10

BOULDER Np Hα SAN FERNANDO Np SUNSPOTS HALE OBSERVATORIES Np CALCIUM REPORT

1419 UT

Sp

16.53-18.04 UT

Sp

10

BOULDER

Np

E

W

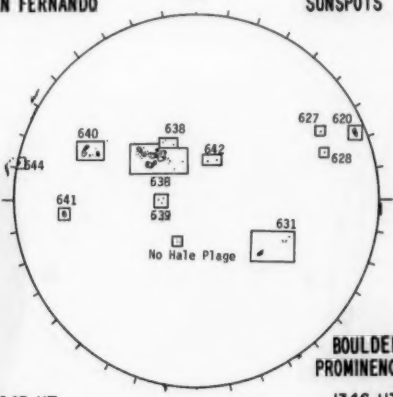
1346 UT

Sp

Hα

SAN FERNANDO

Np



E

W

1645 UT

Sp

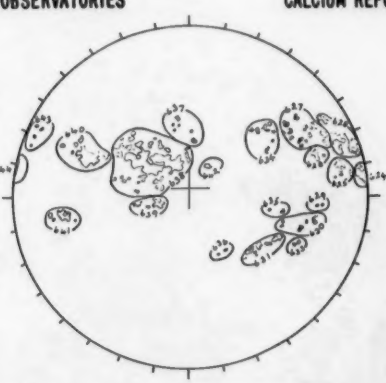
SUNSPOTS

BOULDER PROMINENCES

1346 UT

HALE OBSERVATORIES

Np



E

W

1732 UT

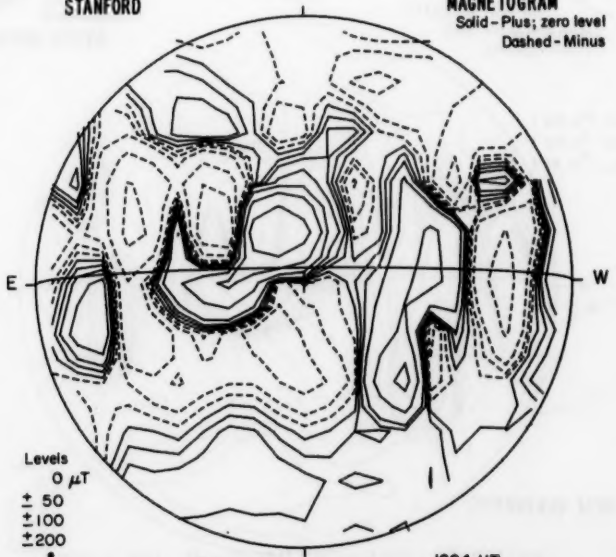
Sp

CALCIUM REPORT

	GOOD	JA
20-	2600	3.0
24-	1300	3.0
25-	0700	3.0
27-	1700	3.0
28-	0500	3.0
30-	0400	2.5
31-	0900	3.0
33-	0100	2.5
34-	0700	3.0
38-	6200	4.0
39-	0400	3.5
40-	1900	3.0
41-	0700	2.5

STANFORD

Np



MAGNETOGRAM

Solid - Plus; zero level

Dashed - Minus

E

W

Levels

0 μT

± 50

±100

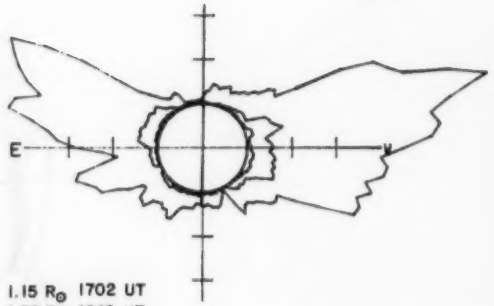
±200

1804 UT

Sp

MAY 11, 1981 (P=-22.07, B_o=-3.09, L_o=240.56)

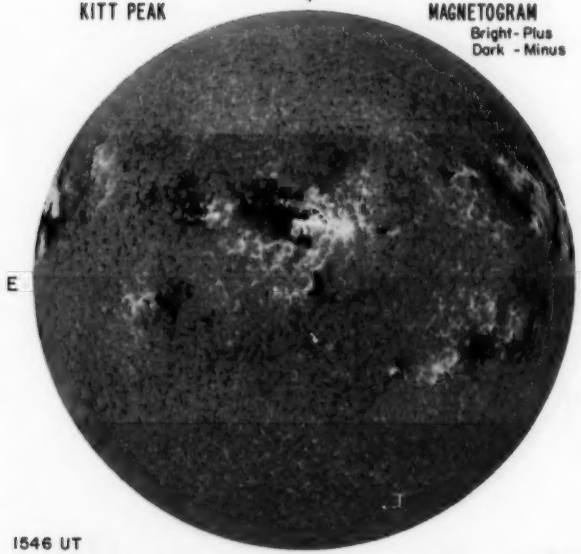
SACRAMENTO PEAK Np CORONA 5303 Å



1.15 $R_\odot$ 1702 UT
1.35 $R_\odot$ 1642 UT
1.55 $R_\odot$ 1651 UT

Sp

KITT PEAK Np MAGNETOGRAM Bright-Plus Dark-Minus



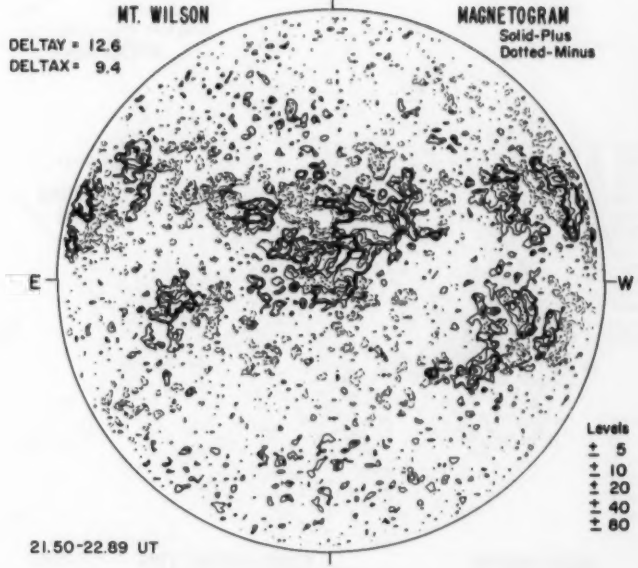
1546 UT

Sp

Np

MT. WILSON MAGNETOGRAM Solid-Plus Dotted-Minus

DELTAY = 12.6
DELTAX = 9.4



21.50-22.89 UT

Sp

11

BOULDER Np Hα

SAN FERNANDO Np

SUNSPOTS HALE OBSERVATORIES Np CALCIUM REPORT

1546 UT

Sp

21.50-22.89 UT

Sp

BOULDER

Np

Hα

E

W

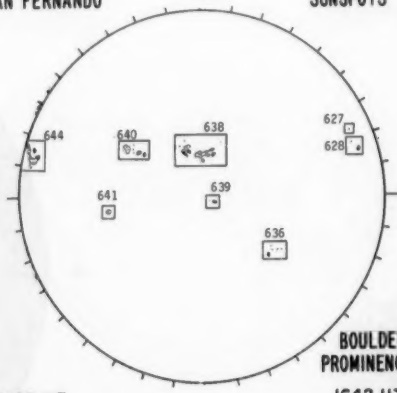
1642 UT

Sp

SAN FERNANDO

Np

SUNSPOTS



E

W E

2023 UT

Sp

HALE OBSERVATORIES

Np

BOULDER PROMINENCES

1642 UT

Sp

CALCIUM REPORT

NO DATA

W

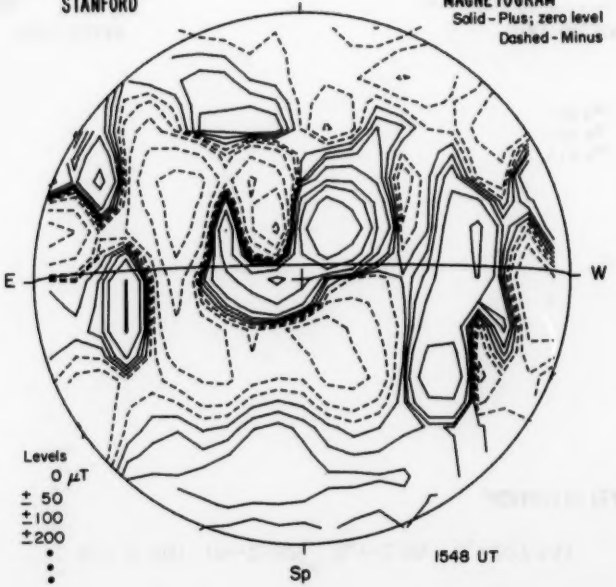
STANFORD

Np

MAGNETOGRAM

Solid - Plus; zero level

Dashed - Minus



E

W

Levels

0 μT

± 50

±100

±200

1548 UT

Sp

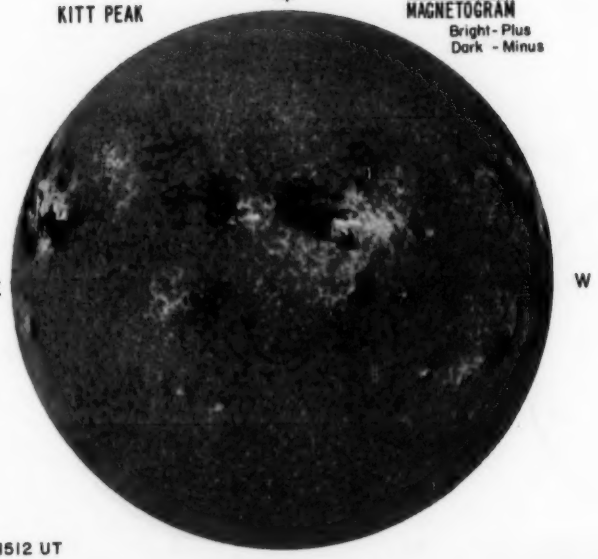
MAY 12, 1981 (P=-21.82, B_o=-2.98, L_o=227.34)

SACRAMENTO PEAK Np CORONA 5303 Å

E NO DATA W

1.15 $R_\odot$
1.35 $R_\odot$
1.55 $R_\odot$

KITT PEAK Np MAGNETOGRAM Bright-Plus Dark-Minus



E W

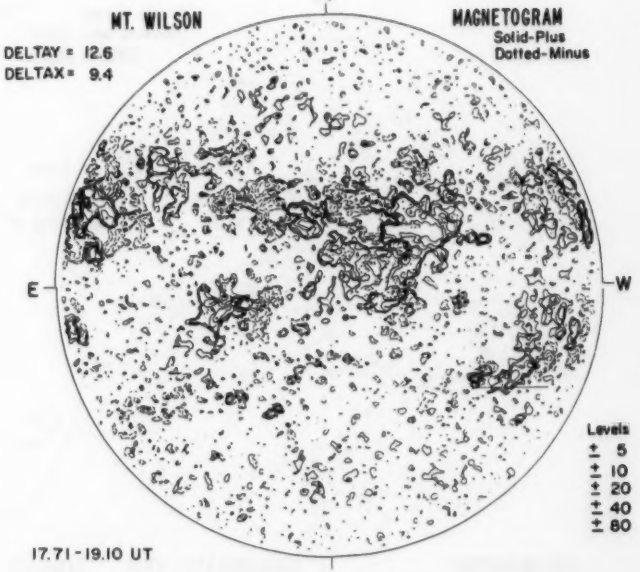
1512 UT

Sp

Sp Np

MT. WILSON MAGNETOGRAM Solid-Plus Dotted-Minus

DELTAY = 12.6
DELTAX = 9.4



E W

Levels
± 5
± ± 10
± ± 20
± ± 40
± ± 80

17.71-19.10 UT

Sp

12

BOULDER Np Hα SAN FERNANDO Np SUNSPOTS HALE OBSERVATORIES Np CALCIUM REPORT

1512 UT

Sp

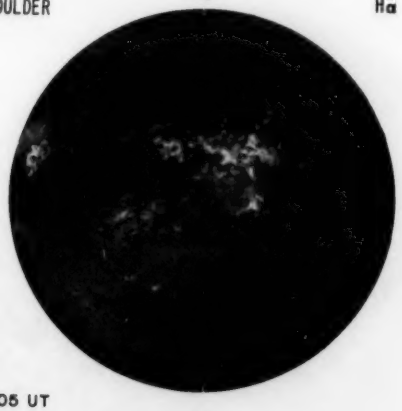
17.71 - 19.10 UT

Sp

12

BOULDER

Np



E W

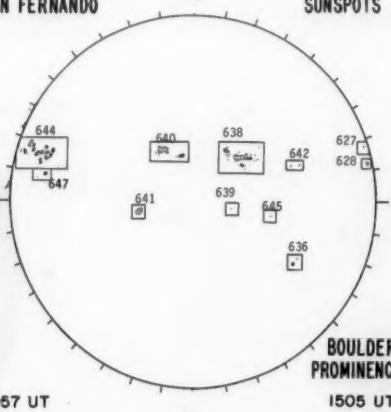
1505 UT

Sp

Hα

SAN FERNANDO

Np



E W

1957 UT

Sp

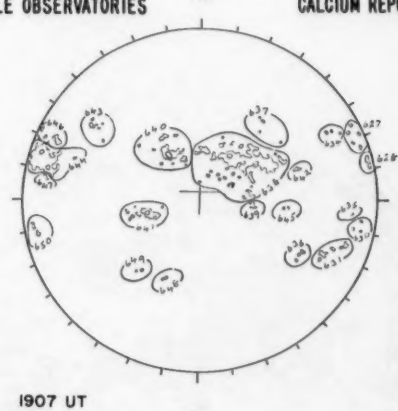
SUNSPOTS

BOULDER PROMINENCES

1505 UT

HALE OBSERVATORIES

Np



E W

1907 UT

Sp

CALCIUM REPORT

GOOD	JA

27- 0600-2.5
28- 0500-3.0
31- 0800-3.0
34- 0200-3.0
36- 0200-3.0
38- 4800-4.0
39- 0100-3.5
40- 1300-3.5
42- 0200-3.0
43- 0300-2.5
44- 4300-3.5
47- 0200-2.5
48- 0100-2.5
50- 0300-3.0

STANFORD

Np

E W

Sp

MAGNETOGRAM

Solid - Plus; zero level

Dashed - Minus

NO DATA MAY 12, 14, 15, 19, 21, 22, 24, 25

Levels

0 μT

± 50

±100

±200

•

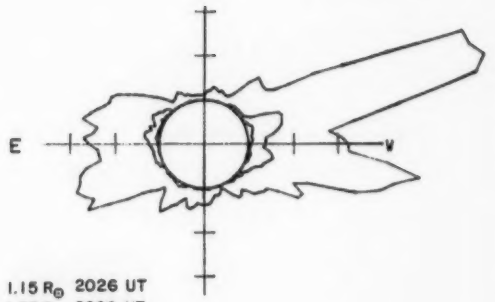
•

•

Sp

MAY 13, 1981 (P=-21.56, B_o=-2.87, L_o=214.12)

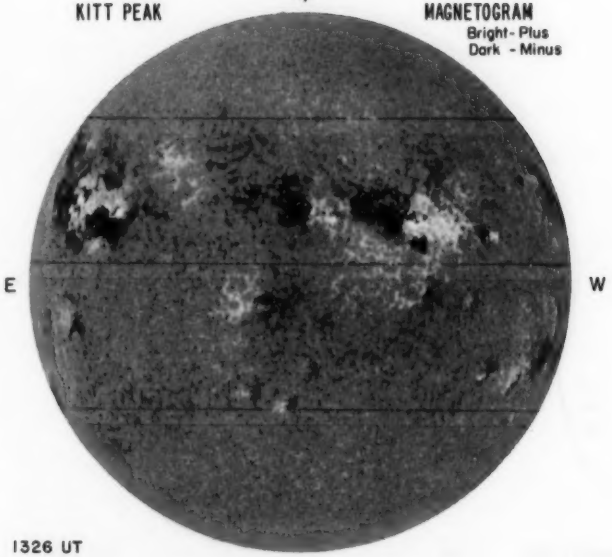
SACRAMENTO PEAK Np CORONA
5303 Å



1.15 $R_\odot$ 2026 UT
1.35 $R_\odot$ 2006 UT
1.55 $R_\odot$ 2015 UT

Sp

KITT PEAK Np MAGNETOGRAM
Bright-Plus
Dark - Minus



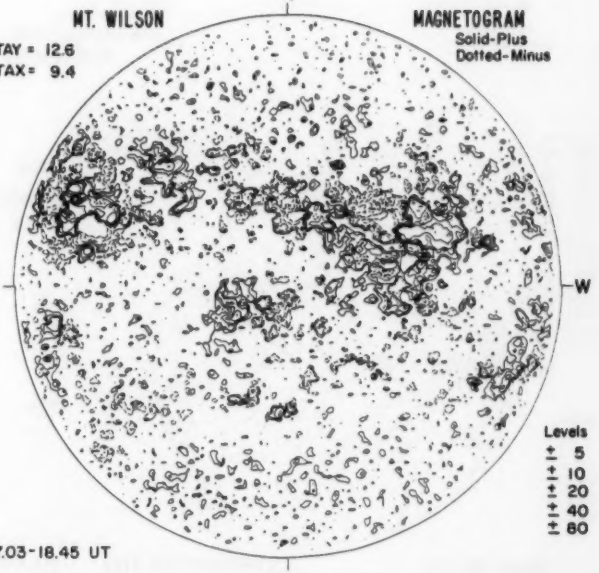
1326 UT

Sp

Np

MT. WILSON MAGNETOGRAM
Solid-Plus
Dotted-Minus

DELTAY = 12.6
DELTAX = 9.4



17.03-18.45 UT

Sp

13

BOULDER Np Hα

SAN FERNANDO Np

SUNSPOTS HALE OBSERVATORIES Np CALCIUM REPORT

1326 UT

Sp

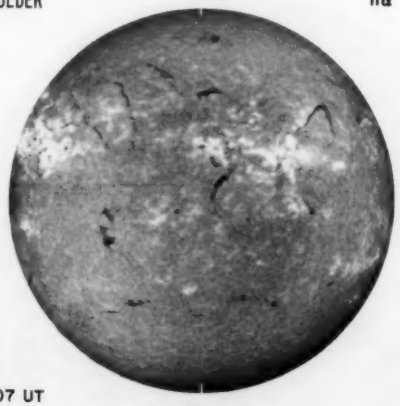
17.03-18.45 UT

Sp

13

BOULDER

Np



E W

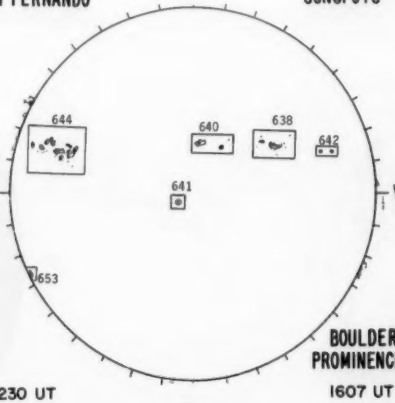
1607 UT

Sp

Hα

SAN FERNANDO

Np



E W

2230 UT

Sp

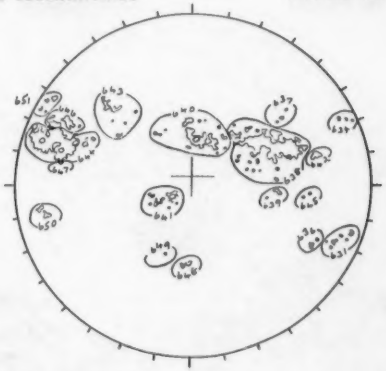
SUNSPOTS

BOULDER PROMINENCES

1607 UT

HALE OBSERVATORIES

Np



E W

1612 UT

Sp

CALCIUM REPORT

	GOOD	JA

31- 0700-2.5
36- 0200-2.5
38- 5400-3.5
39- 0200-3.0
40- 2000-3.0
42- 0400-3.0
43- 0600-2.5
44- 5600-3.5
46- 1200-3.0
47- 0100-2.5
48- 0200-3.0
50- 0400-2.5
51- 0400-3.0

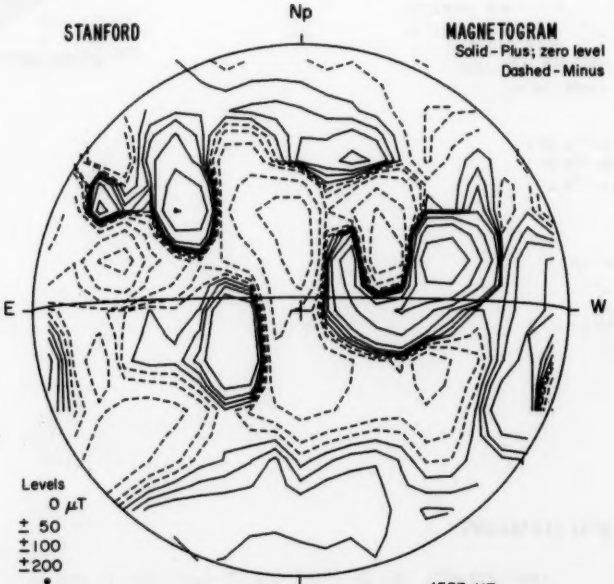
STANFORD

Np

MAGNETOGRAM

Solid - Plus; zero level

Dashed - Minus



E W

Levels

0 μT

± 50

±100

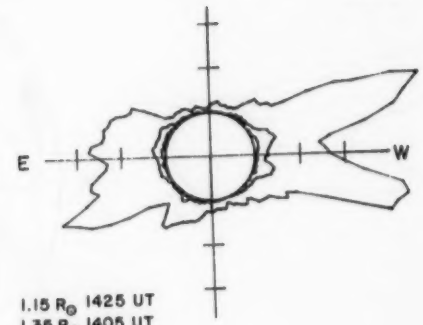
±200

Sp

1553 UT

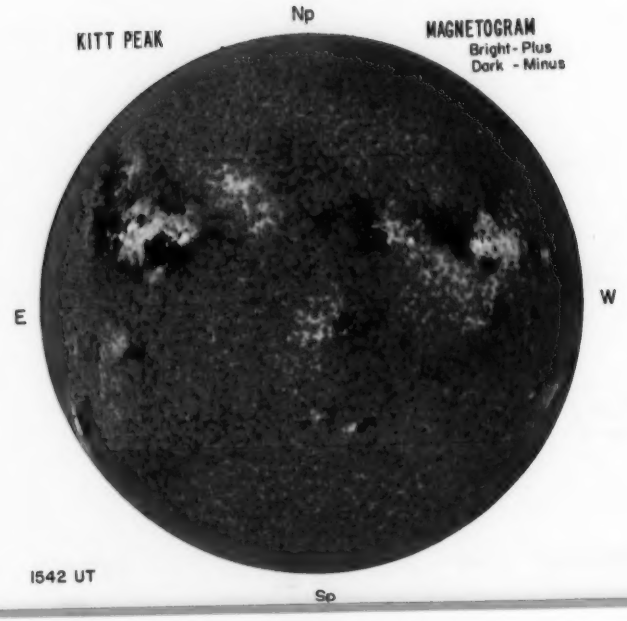
MAY 14, 1981 (P=-21.30, B_o=-2.75, L_o=200.89)

SACRAMENTO PEAK



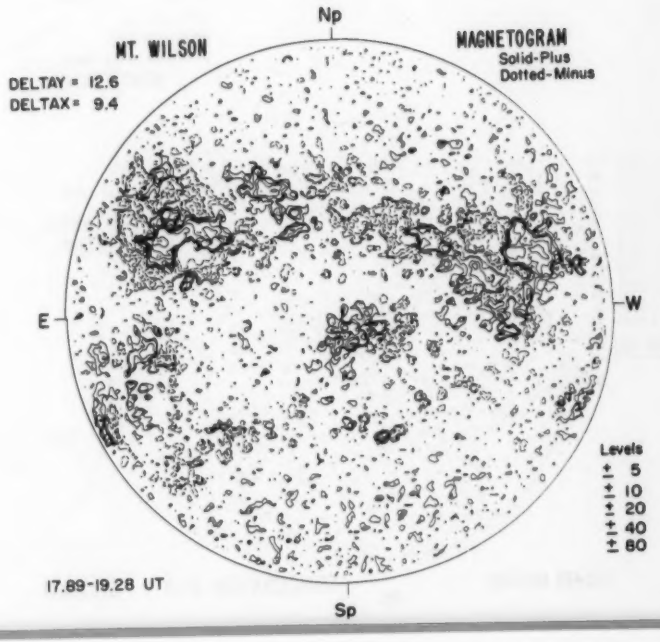
1.15 $R_\odot$ 1425 UT
1.35 $R_\odot$ 1405 UT
1.55 $R_\odot$ 1414 UT

KITT PEAK



1542 UT

MT. WILSON



17.89-19.28 UT

14

BOULDER

Hα

BOULDER

SUNSPOTS

HALE OBSERVATORIES

CALCIUM REPORT

1542 UT

Sp

17.89-19.28 UT

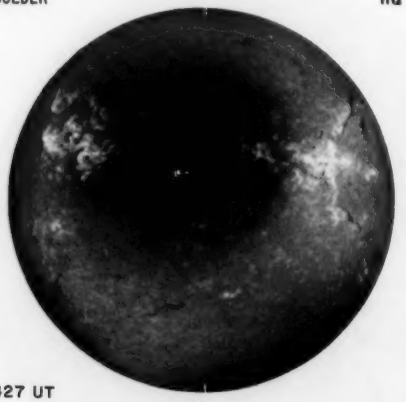
Sp

14

BOULDER

Np

Hα



E

W

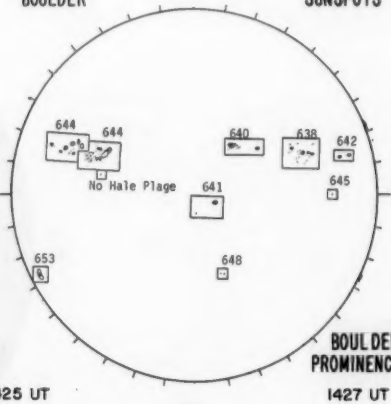
1427 UT

Sp

BOULDER

Np

SUNSPOTS



E

W

1425 UT

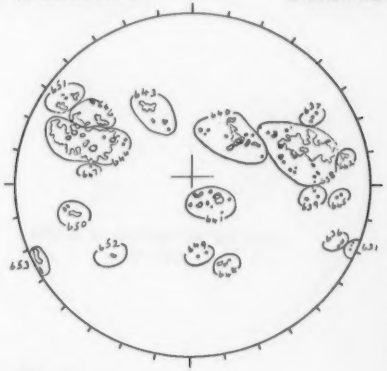
Sp

BOULDER PROMINENCES

1427 UT

HALE OBSERVATORIES

Np



E

W

1839 UT

Sp

CALCIUM REPORT

GOOD	JA

31- 0200-2.5
36- 0100-2.5
38- 5000-3.5
39- 0200-2.5
40- 1400-3.5
41- 0600-2.5
42- 0300-3.0
43- 0700-3.0
44- 7600-4.0
46- 0800-3.5
47- 0100-3.0
48- 0200-3.5
49- 0100-2.5
50- 0300-3.0
51- 0600-3.0
52- 0100-3.0
53- 0500-3.5

STANFORD

Np

MAGNETOGRAM

Solid - Plus; zero level

Dashed - Minus

E

NO DATA

W

Levels

0 μT

± 50

±100

±200

•

•

•

Sp

MAY 15, 1981 (P=-21.03, B_o=-2.64, L_o=187.66)

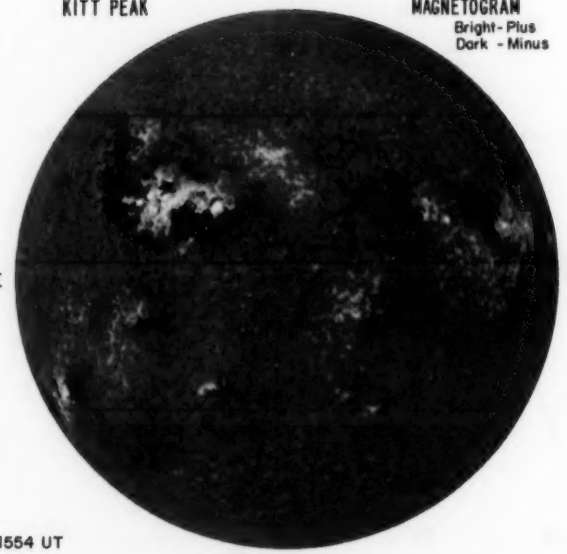
SACRAMENTO PEAK Np CORONA 5303 Å

E W

1.15 $R_\odot$ 1420 UT
1.35 $R_\odot$ 1400 UT
1.55 $R_\odot$ 1409 UT

Sp

KITT PEAK Np MAGNETOGRAM Bright - Plus Dark - Minus



E W

1554 UT

Sp

MT. WILSON Np MAGNETOGRAM Solid - Plus Dotted - Minus

DELTAY =
DELTAX =

E

NO DATA
MAY 15, 16, 18, 19, 20, 24, 25, 26, 27

W

Levels
± 5
± 10
± 20
± 40
± 80

Sp

15

SACRAMENTO PEAK Np Hα

SAN FERNANDO Np

SUNSPOTS

HALE OBSERVATORIES Np

CALCIUM REPORT

1554 UT

Sp

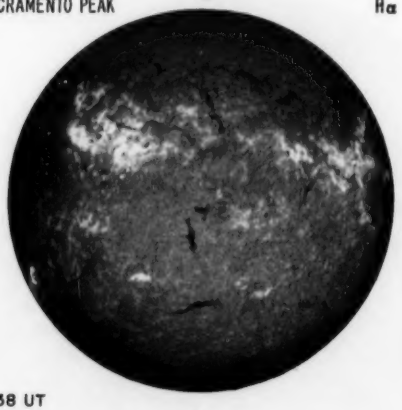
Sp

15

SACRAMENTO PEAK

Np

Hα



E

W

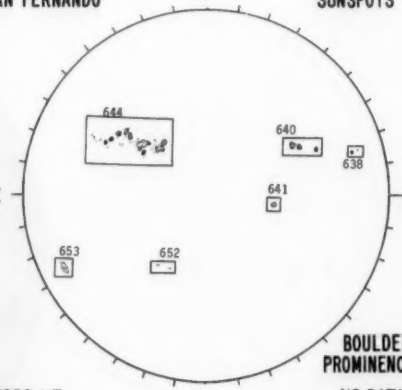
1538 UT

Sp

SAN FERNANDO

Np

SUNSPOTS



E

W

1950 UT

Sp

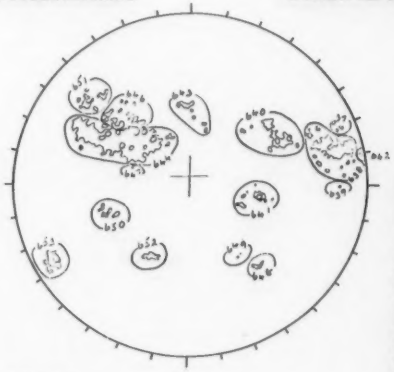
BOULDER PROMINENCES

NO DATA

HALE OBSERVATORIES

Np

CALCIUM REPORT



E

W

2107 UT

Sp

GOOD	JA
38- 5100-3.5	
40- 1800-3.5	
42- 0100-3.0	
43- 0600-3.0	
44- 9500-4.0	
46- 1300-3.5	
47- 0100-3.0	
48- 0300-3.0	
50- 0400-3.0	
51- 1200-3.0	
52- 0400-3.0	
53- 1200-4.0	

STANFORD

Np

MAGNETOGRAM

Solid - Plus; zero level

Dashed - Minus

E

NO DATA

W

Levels

0 μT

± 50

±100

±200

•

•

•

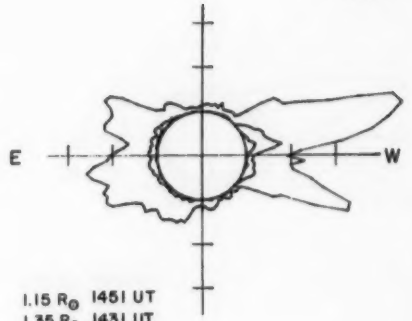
Sp

73

May 81

MAY 16, 1981 (P=-20.75, B_o=-2.53, L_o=174.44)

SACRAMENTO PEAK Np CORONA 5303 Å

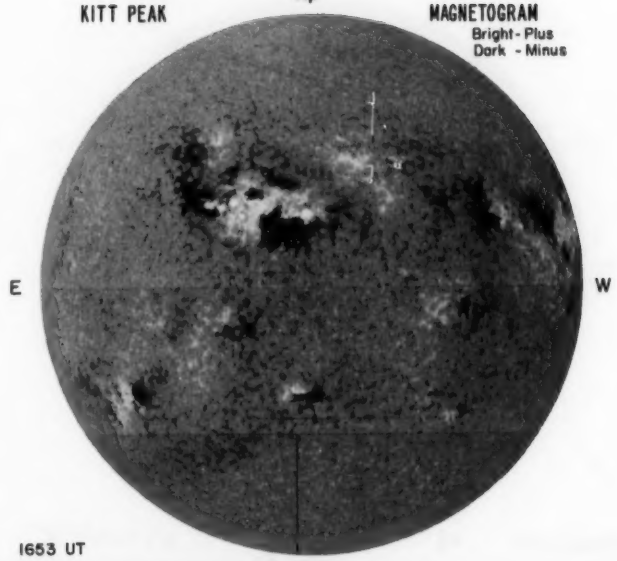


1.15 $R_\odot$ 1451 UT
1.35 $R_\odot$ 1431 UT
1.55 $R_\odot$ 1440 UT

Sp

Np

KITT PEAK Np MAGNETOGRAM
Bright - Plus
Dark - Minus



1653 UT

Sp

MT. WILSON MAGNETOGRAM
Solid-Plus
Dotted-Minus

DELTAY =
DELTAX =

E NO DATA W

Levels
± 5
± 10
± 20
± 40
± 80

Sp

16

SACRAMENTO PEAK Np Hα

SAN FERNANDO Np

SUNSPOTS HALE OBSERVATORIES Np CALCIUM REPORT

1653 UT

Sp

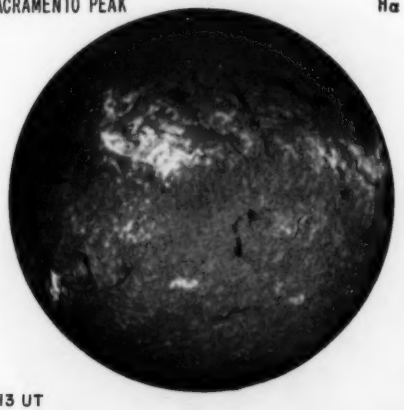
Sp

16

SACRAMENTO PEAK

Np

Hα



E

W

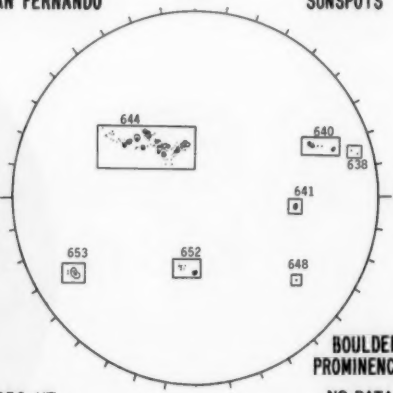
1513 UT

Sp

SAN FERNANDO

Np

SUNSPOTS



E

W

BOULDER PROMINENCES

NO DATA

1650 UT

Sp

HALE OBSERVATORIES

Np

CALCIUM REPORT

E

W

	GOOD	JA
38-	2800-3.5	
40-	2100-3.5	
41-	0600-2.5	
43-	0900-3.0	
44-	9400-4.0	
46-	1200-3.5	
47-	0100-3.0	
48-	0300-3.0	
50-	0500-3.0	
51-	0800-3.0	
52-	0500-3.5	
53-	1800-4.0	

1322 UT

Sp

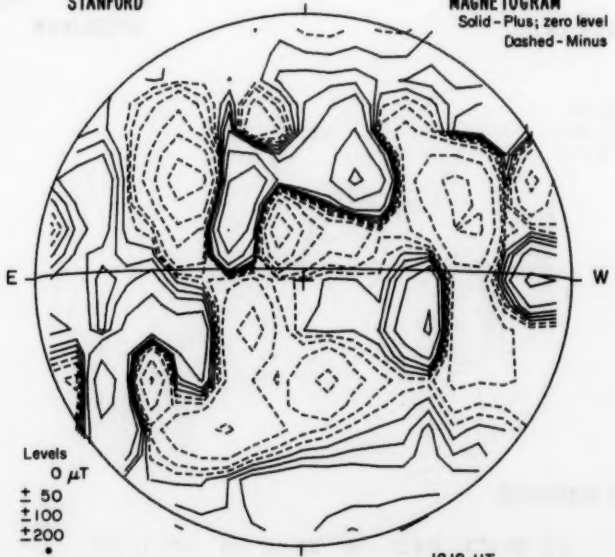
STANFORD

Np

MAGNETOGRAM

Solid - Plus; zero level

Dashed - Minus



E

W

Levels

0 μT

± 50

±100

±200

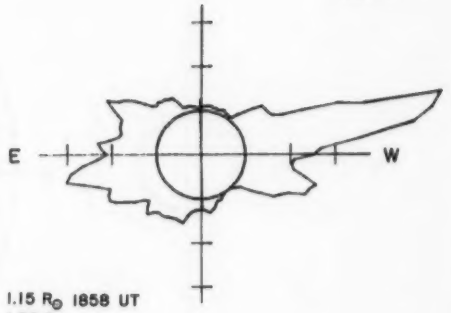
• • •

1818 UT

Sp

MAY 17, 1981 (P=-20.47, B_o=-2.41, L_o=161.21)

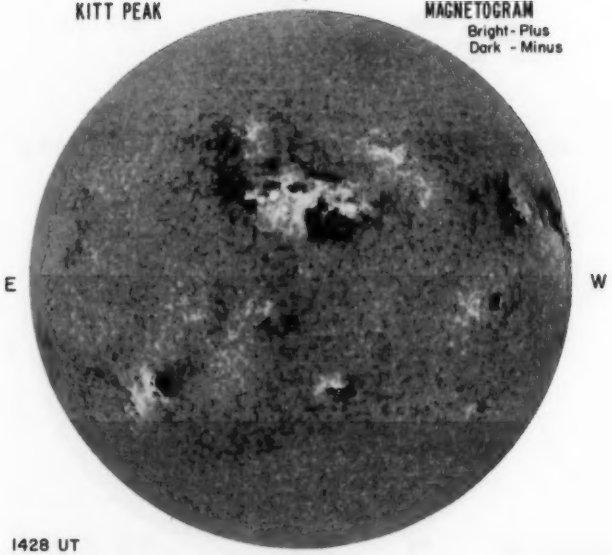
SACRAMENTO PEAK Np CORONA 5303 Å



1.15 $R_\odot$ 1858 UT
1.35 $R_\odot$
1.55 $R_\odot$

Sp

KITT PEAK Np MAGNETOGRAM Bright-Plus Dark-Minus



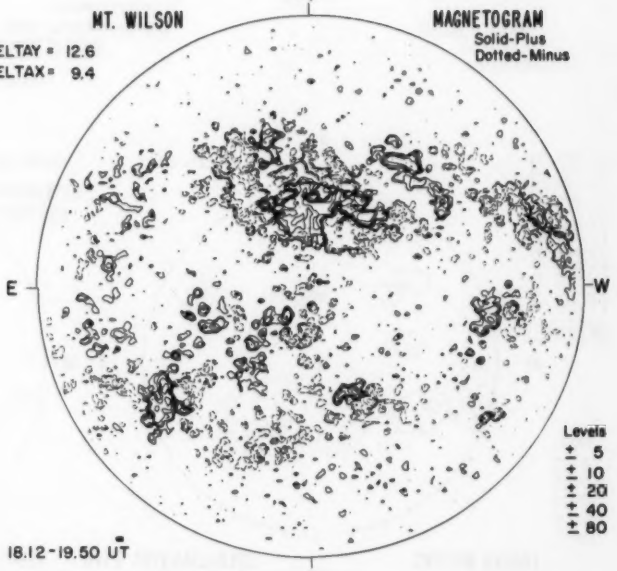
1428 UT

Sp

Np

MT. WILSON MAGNETOGRAM Solid-Plus Dotted-Minus

DELTAY = 12.6
DELTAX = 9.4



18.12-19.50 UT

Sp

17

SACRAMENTO PEAK Np Hα SAN FERNANDO Np SUNSPOTS HALE OBSERVATORIES Np CALCIUM REPORT

1428 UT

Sp

18.12-19.50 UT

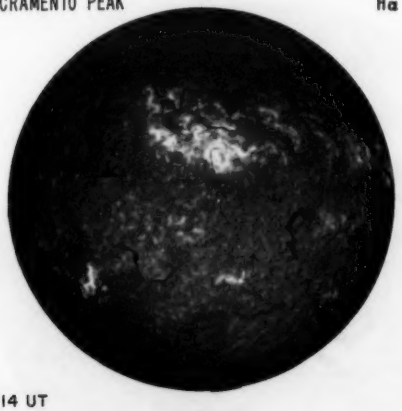
Sp

17

SACRAMENTO PEAK

Np

Hα



E

W

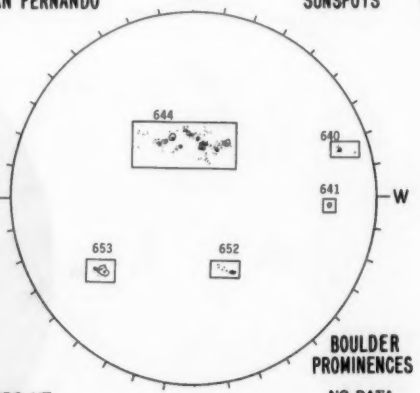
2114 UT

Sp

SAN FERNANDO

Np

SUNSPOTS



E

W

BOULDER PROMINENCES

NO DATA

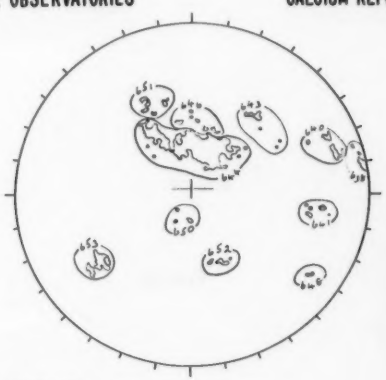
1650 UT

Sp

HALE OBSERVATORIES

Np

CALCIUM REPORT



E

W

FAIR	JA

38- 1000-2.5
40- 1000-3.0
43- 0600-3.0
44- 9300-4.0
46- 0700-3.0
48- 0200-3.0
51- 0500-3.0
52- 0300-3.0
53- 1200-4.0

1849 UT

Sp

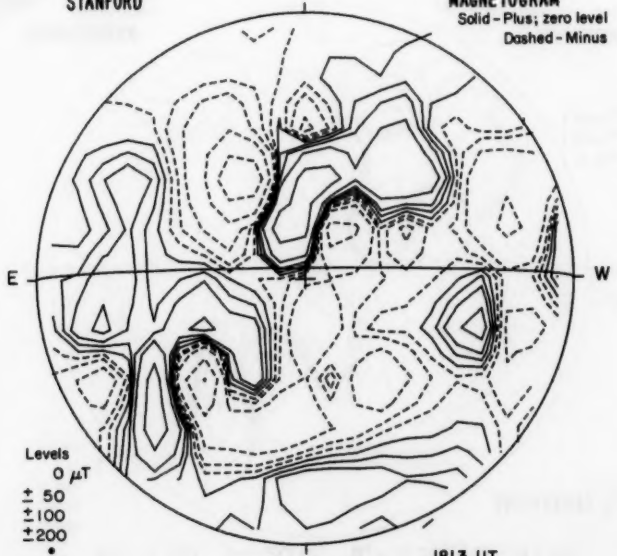
STANFORD

Np

MAGNETOGRAM

Solid - Plus; zero level

Dashed - Minus



E

W

Levels

0 μT

± 50

±100

±200

1813 UT

Sp

77

May 81

MAY 18, 1981 (P=-20.18, B_o=-2.30, L_o=147.98)

SACRAMENTO PEAK Np CORONA 5303 Å

E W

1.15 $R_\odot$ 1428 UT
1.35 $R_\odot$ 1408 UT
1.55 $R_\odot$ 1418 UT

Sp

KITT PEAK Np MAGNETOGRAM Bright-Plus Dark-Minus

E W

1440 UT

Sp

MT. WILSON Np MAGNETOGRAM Solid-Plus Dotted-Minus

DELTAY =
DELTAX =

E NO DATA W

Levels
+ 5
+ + 10
+ + + 20
+ + + + 40
+ + + + + 80

Sp

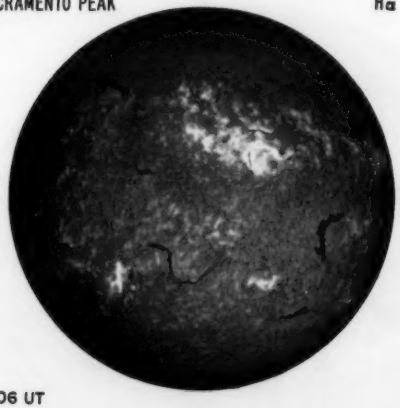
18

SACRAMENTO PEAK Np Hα SAN FERNANDO Np SUNSPOTS HALE OBSERVATORIES Np CALCIUM REPORT

SACRAMENTO PEAK

Np

Hα



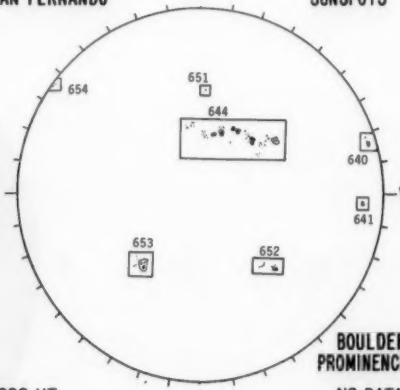
E W

1506 UT

Sp

SAN FERNANDO

Np



E W E

1800 UT

Sp

SUNSPOTS

HALE OBSERVATORIES

BOULDER PROMINENCES

NO DATA

Np

NO DATA

Sp

CALCIUM REPORT

E W

Sp

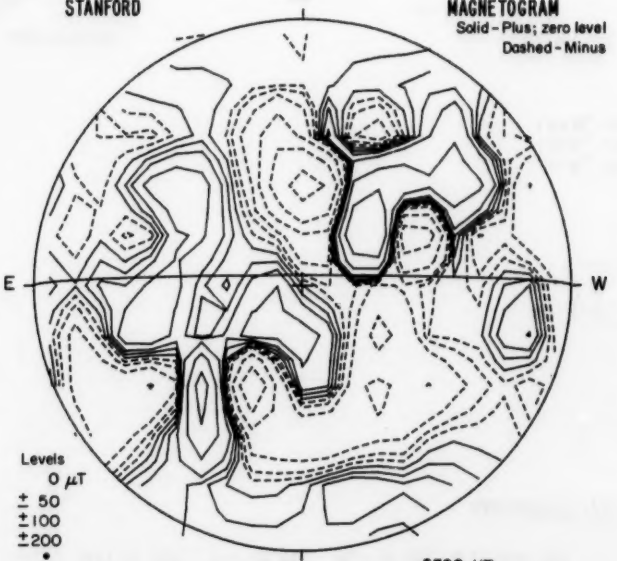
STANFORD

Np

MAGNETOGRAM

Solid - Plus; zero level

Dashed - Minus



2328 UT

Sp

MAY 19, 1981 (P=-19.88, B_o=-2.18, L_o=134.76)

SACRAMENTO PEAK Np CORONA 5303 Å

E W

1.15 $R_\odot$ 1512 UT
1.35 $R_\odot$ 1450 UT
1.55 $R_\odot$ 1501 UT

Sp

Np

KITT PEAK Np MAGNETOGRAM Bright - Plus Dark - Minus

E W

1415 UT

Sp

MT. WILSON MAGNETOGRAM Solid-Plus Dotted-Minus

DELTAY =
DELTAX =

E NO DATA W

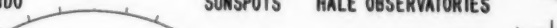
Levels
± 5
± ± 10
± ± ± 20
± ± ± ± 40
± ± ± ± ± 80

Sp

19

SACRAMENTO PEAK Np Hα

SAN FERNANDO Np



SUNSPOTS HALE OBSERVATORIES Np

CALCIUM REPORT

1415 UT

Sp

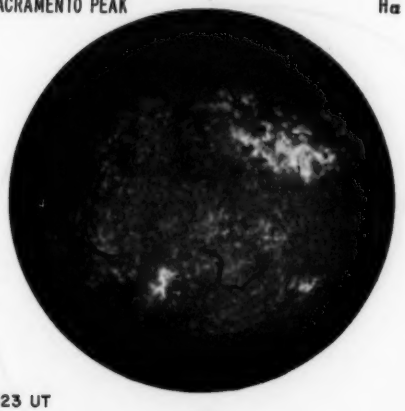
Sp

19

SACRAMENTO PEAK

Np

Hα



E

W

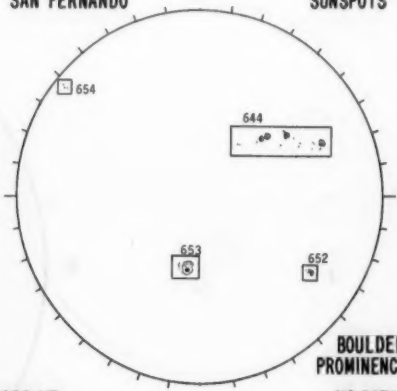
1623 UT

Sp

SAN FERNANDO

Np

SUNSPOTS



E

W

BOULDER PROMINENCES

NO DATA

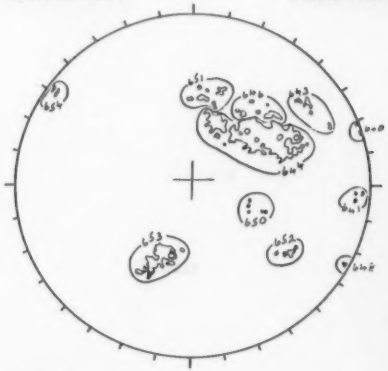
2250 UT

Sp

HALE OBSERVATORIES

Np

CALCIUM REPORT



E

W

G000	JA
40-	0200-2.5
41-	0300-2.5
43-	0600-3.0
44-	9500-4.0
46-	0800-3.5
48-	0100-3.0
51-	0700-3.0
52-	0400-3.5
53-	2400-4.0
54-	0400-3.0

1324 UT

Sp

STANFORD

Np

MAGNETOGRAM

Solid - Plus; zero level

Dashed - Minus

E

NO DATA

W

Levels

0 μT

± 50

±100

±200

Sp

81

May 81

MAY 20, 1981 (P=-19.58, B_o=-2.07, L_o=121.53)

SACRAMENTO PEAK Np CORONA 5303 Å

E NO DATA W

1.15 $R_\odot$
1.35 $R_\odot$
1.55 $R_\odot$

Sp

Np

KITT PEAK Np MAGNETOGRAM Bright-Plus Dark-Minus

MT. WILSON MAGNETOGRAM Solid-Plus Dotted-Minus

DELTAY =
DELTAX =

E NO DATA W

Levels
± 5
± 10
± 20
± 40
± 80

Sp Sp

20

SACRAMENTO PEAK Np Hα SAN FERNANDO Np SUNSPOTS HALE OBSERVATORIES Np CALCIUM REPORT

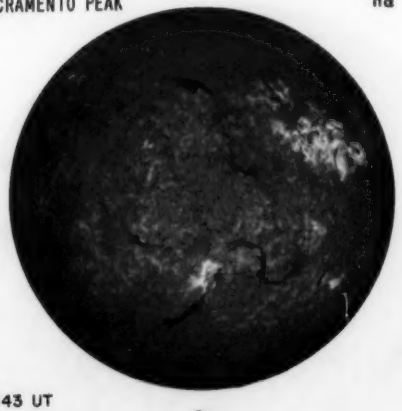
Sp

Sp

SACRAMENTO PEAK

Np

Hα



E

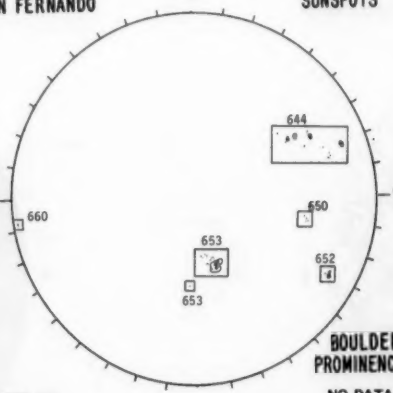
W

1843 UT

Sp

SAN FERNANDO

Np



W E

2020 UT

Sp

SUNSPOTS

HALE OBSERVATORIES

Np

NO DATA

BOULDER PROMINENCES

NO DATA

Sp

CALCIUM REPORT

W

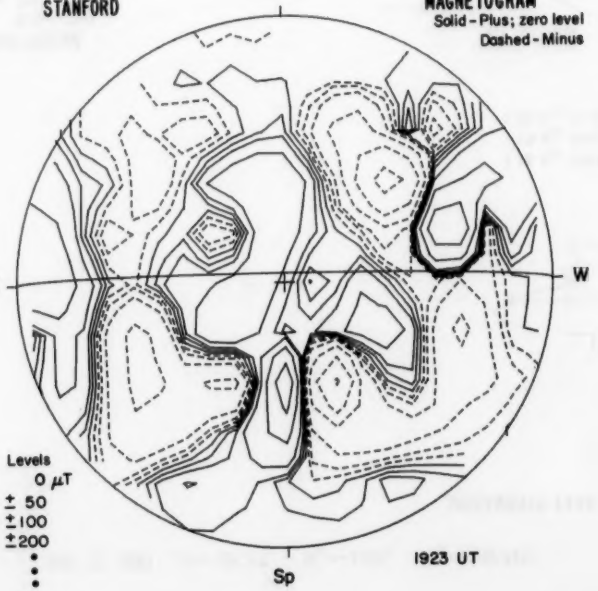
STANFORD

Np

MAGNETOGRAM

Solid - Plus; zero level

Dashed - Minus

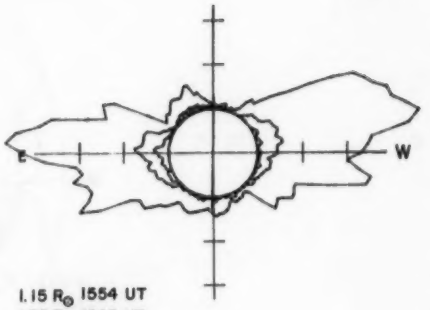


1923 UT

Sp

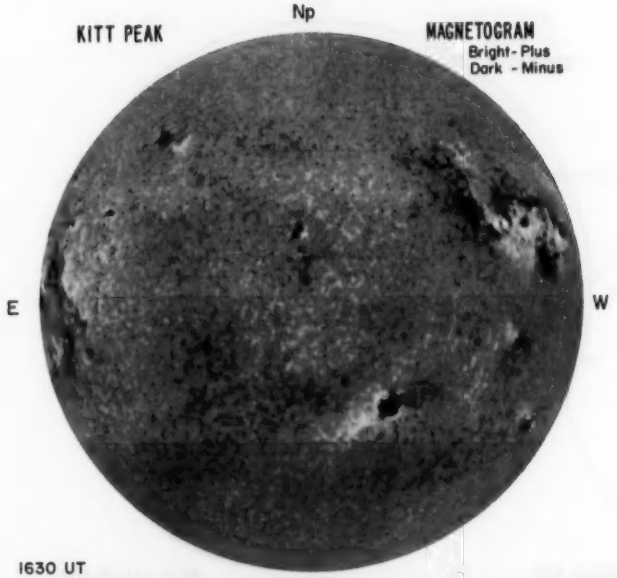
MAY 21, 1981 (P=-19.27, B_o=-1.95, L_o=108.30)

SACRAMENTO PEAK Np CORONA 5303 Å



1.15 $R_\odot$ 1554 UT
1.35 $R_\odot$ 1603 UT
1.55 $R_\odot$ 1613 UT

KITT PEAK Np MAGNETOGRAM Bright-Plus Dark-Minus

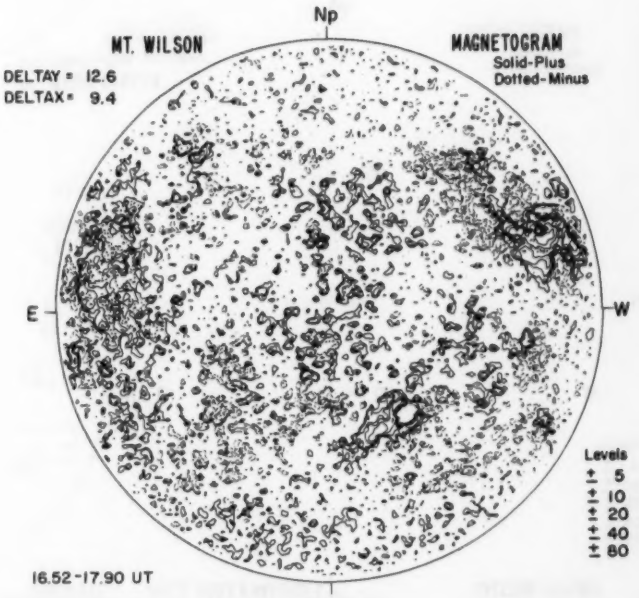


1630 UT

Sp

MT. WILSON Np MAGNETOGRAM Solid-Plus Dotted-Minus

DELTAY = 12.6
DELTAX = 9.4



16.52-17.90 UT

Sp

21

BOULDER Np Hα SAN FERNANDO Np SUNSPOTS HALE OBSERVATORIES Np CALCIUM REPORT

1630 UT

Sp

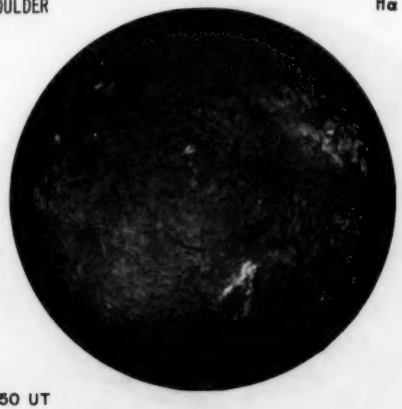
16.52-17.90 UT

Sp

21

BOULDER

Np



E W

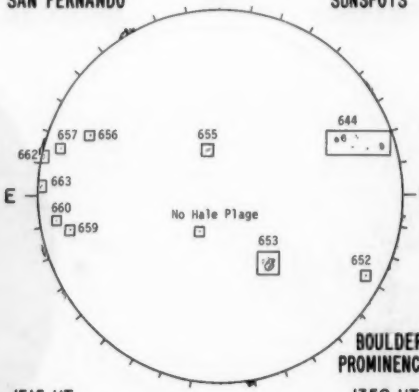
1350 UT

Sp

Hα

SAN FERNANDO

Np



E W

1515 UT

Sp

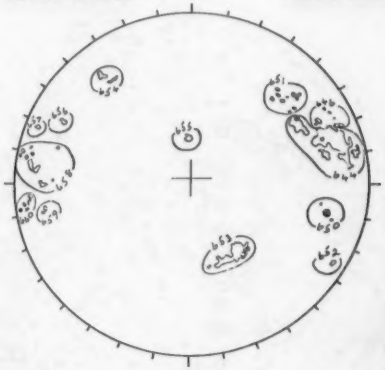
SUNSPOTS

BOULDER PROMINENCES

1350 UT

HALE OBSERVATORIES

Np



E W

1820 UT

Sp

CALCIUM REPORT

GOOD	JA

44- 6700-3.5
46- 0400-3.0
50- 0200-2.5
51- 0700-2.5
52- 0200-3.0
53- 1800-4.0
54- 0500-3.0
55- 0200-3.0
56- 0200-3.0
57- 0200-2.5
58- 1200-3.0
59- 0200-3.0
60- 0500-3.0

STANFORD

Np

MAGNETOGRAM

Solid - Plus; zero level

Dashed - Minus

E

NO DATA

W

Levels

0 μT

± 50

±100

±200

•

•

•

Sp

85

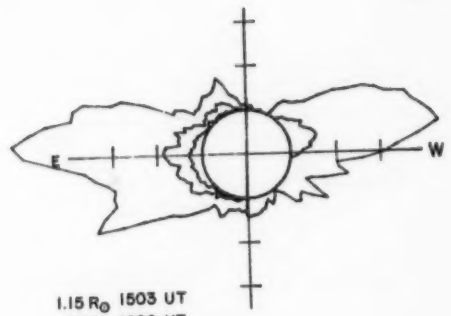
May 81

MAY 22, 1981 (P=-18.95, B_o=-1.83, L_o=95.07)

SACRAMENTO PEAK

Np

CORONA
5303 Å



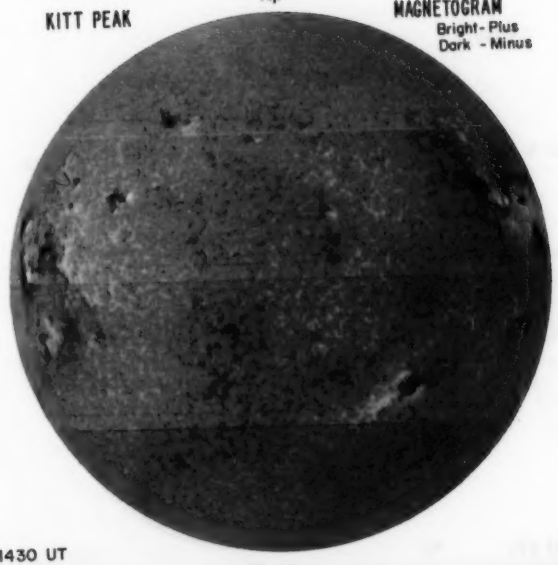
1.15 $R_\odot$ 1503 UT
1.35 $R_\odot$ 1600 UT
1.55 $R_\odot$ 1613 UT

Sp

KITT PEAK

Np

MAGNETOGRAM
Bright - Plus
Dark - Minus



1430 UT

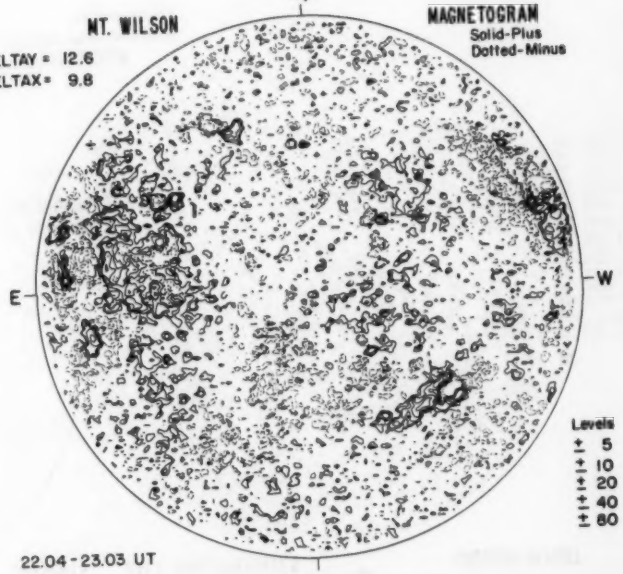
Sp

NT. WILSON

Np

MAGNETOGRAM
Solid-Plus
Dotted-Minus

DELTAY = 12.6
DELTAX = 9.8



22.04 - 23.03 UT

Sp

22

BOULDER

Np

Hα

SAN FERNANDO

Np

SUNSPOTS

HALE OBSERVATORIES

Np

CALCIUM REPORT

1430 UT

Sp

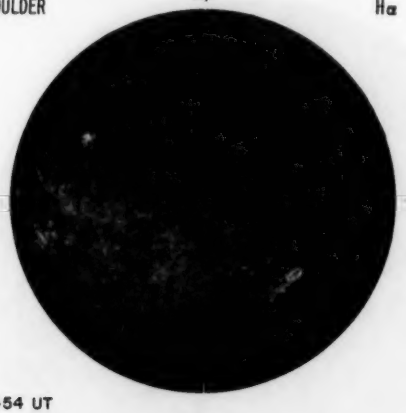
22.04-23.03 UT

Sp

22

BOULDER

Np



E W

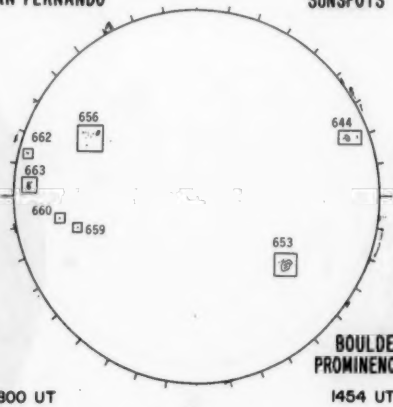
1454 UT

Sp

Hα

SAN FERNANDO

Np



E W

1800 UT

Sp

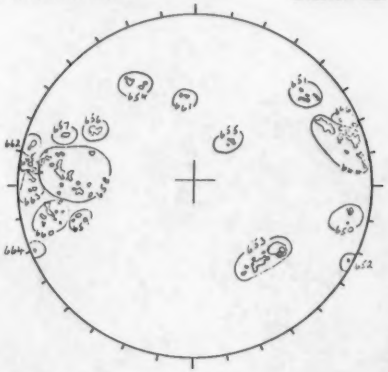
SUNSPOTS

BOULDER PROMINENCES

1454 UT

HALE OBSERVATORIES

Np



E W

1841 UT

Sp

CALCIUM REPORT

W

	GOOD	JA

44- 2500-3.5
46- 0300-3.0
50- 0300-2.0
51- 0500-2.5
52- 0100-2.5
53- 1700-4.0
54- 0500-3.0
55- 0200-3.0
56- 0400-3.5
57- 0200-3.0
58- 2600-3.0
59- 0200-2.5
60- 0700-3.0
61- 0100-2.5
62- 0400-3.0
63- 0400-3.0

STANFORD

Np

MAGNETOGRAM

Solid - Plus; zero level

Dashed - Minus

E

NO DATA

W

Levels

0 μT

± 50

±100

±200

•

•

•

Sp

87

May 81

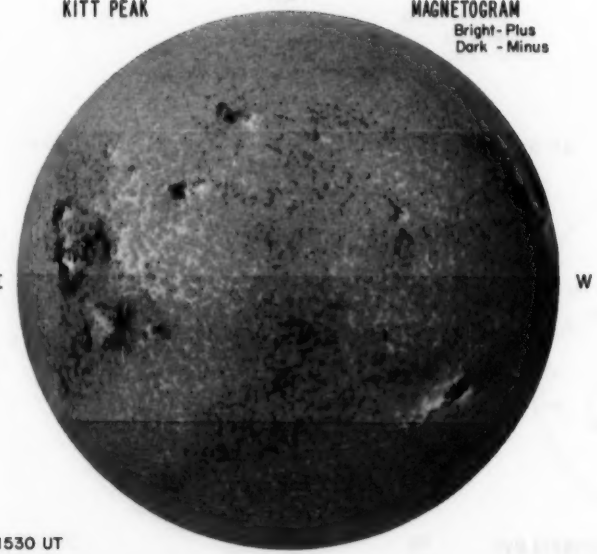
MAY 23, 1981 (P=-18.63, B_o=-1.72, L_o=81.84)

SACRAMENTO PEAK Np CORONA 5303 Å

E NO DATA W

1.15 $R_\odot$
1.35 $R_\odot$
1.55 $R_\odot$

KITT PEAK Np MAGNETOGRAM Bright-Plus Dark-Minus



E W

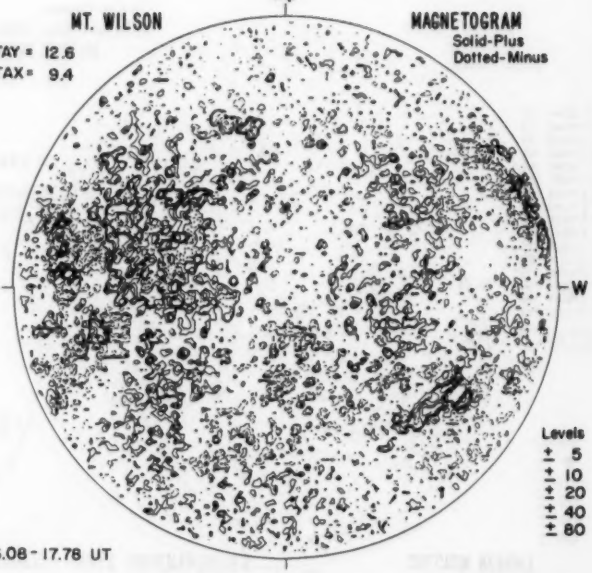
1530 UT

Sp

Sp Np

MT. WILSON MAGNETOGRAM Solid-Plus Dotted-Minus

DELTAY = 12.6
DELTAX = 9.4



E W

Levels
± 5
± 10
± 20
± 40
± 80

16.08-17.78 UT

Sp

23

BOULDER Np Hα

SAN FERNANDO Np

SUNSPOTS HALE OBSERVATORIES Np CALCIUM REPORT

1530 UT

Sp

16.08 - 17.78 UT

Sp

23

BOULDER

Np

E

W

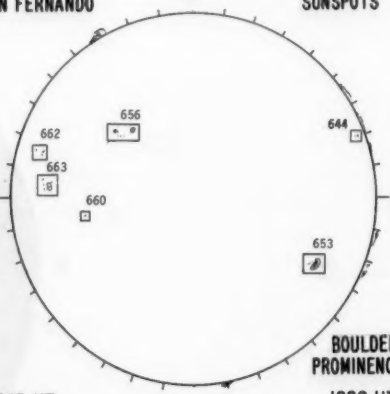
1820 UT

Sp

Hα

SAN FERNANDO

Np



E

W

1545 UT

Sp

SUNSPOTS

BOULDER PROMINENCES

1820 UT

HALE OBSERVATORIES

Np

E

W

1713 UT

Sp

CALCIUM REPORT

	GOOD	JA
44-	1400	4.0
51-	0500	2.5
53-	1000	4.0
54-	0400	3.0
56-	0500	3.5
57-	0100	2.5
58-	2300	3.5
59-	0100	3.0
60-	0800	3.0
61-	0100	2.5
62-	0400	3.5
63-	0500	3.5
65-	0200	3.5
66-	0200	3.5

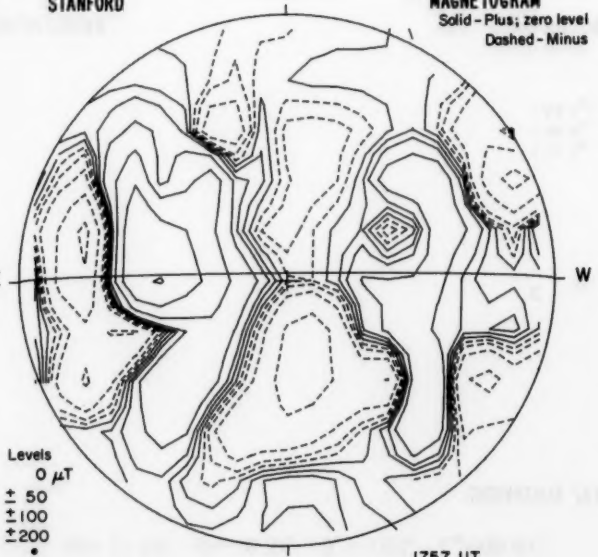
STANFORD

Np

MAGNETOGRAM

Solid - Plus; zero level

Dashed - Minus



E

W

Levels

0 μT

± 50

±100

±200

•

•

•

Sp

1757 UT

MAY 24, 1981 (P=-18.31, B_o=-1.60, L_o=68.61)

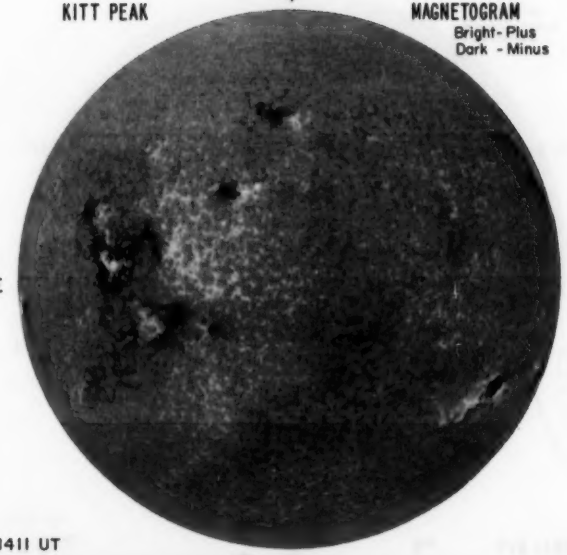
SACRAMENTO PEAK Np CORONA 5303 Å

E NO DATA W

1.15 $R_\odot$
1.35 $R_\odot$
1.55 $R_\odot$

Sp
Np

KITT PEAK Np MAGNETOGRAM Bright-Plus Dark-Minus



E W

1411 UT

So

MT. WILSON MAGNETOGRAM Solid-Plus Dotted-Minus

DELTAY =
DELTAX =

E NO DATA W

Levels
± 5
± 10
± 20
± 40
± 80

Sp

24

BOULDER Np Hα SAN FERNANDO Np SUNSPOTS HALE OBSERVATORIES Np CALCIUM REPORT

1411 UT

Sp

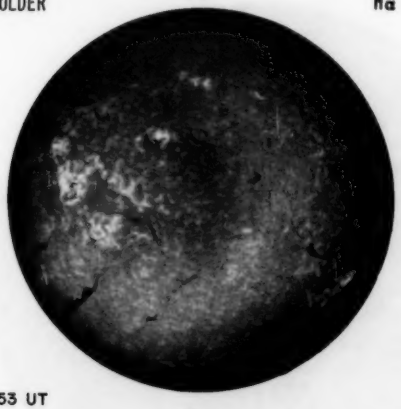
Sp

24

BOULDER

Np

Hα



E

W

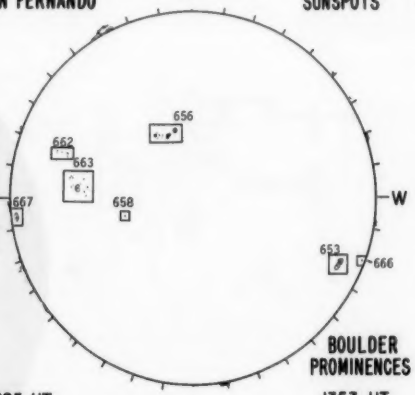
1353 UT

Sp

SAN FERNANDO

Np

SUNSPOTS



E

W

1825 UT

Sp

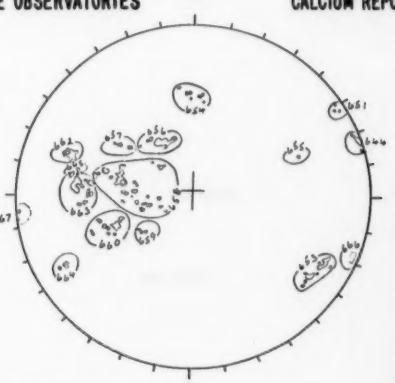
BOULDER PROMINENCES

1353 UT

HALE OBSERVATORIES

Np

CALCIUM REPORT



E

W

1603 UT

Sp

GOOD	JA
44-	0600-2.5
53-	0900-3.5
54-	0300-3.0
56-	0700-3.5
57-	0200-2.5
58-	1900-3.0
60-	0800-3.0
62-	0600-3.0
63-	1100-3.0
65-	0100-3.0
66-	0600-4.0
67-	0200-2.5

STANFORD

Np

MAGNETOGRAM

Solid - Plus; zero level

Dashed - Minus

E

NO DATA

W

Levels

0 μT

± 50

±100

±200

•

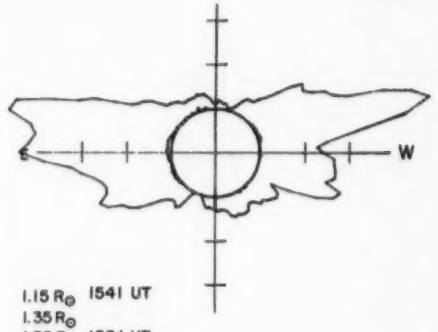
•

•

Sp

MAY 25, 1981 (P=-17.97, B_o=-1.48, L_o=55.38)

SACRAMENTO PEAK Np CORONA 5303 Å

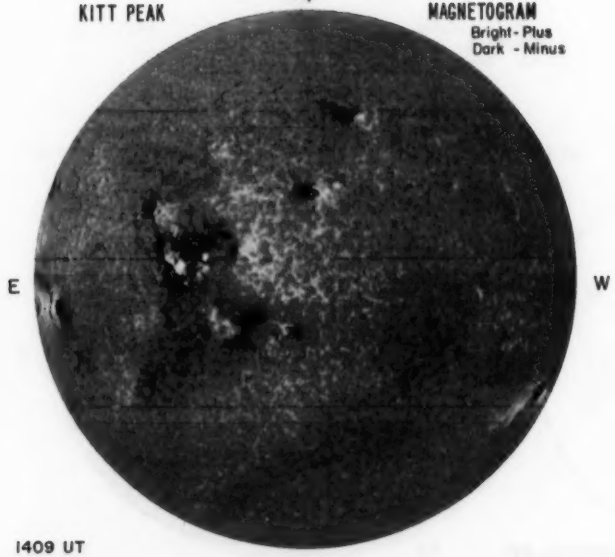


1.15 $R_\odot$ 1541 UT
1.35 $R_\odot$
1.55 $R_\odot$ 1531 UT

Sp

Np

KITT PEAK Np MAGNETOGRAM Bright - Plus Dark - Minus



1409 UT

Sp

MT. WILSON MAGNETOGRAM Solid-Plus Dotted-Minus

DELTAY =
DELTAX =

E NO DATA W

Levels
± 5
± 10
± 20
± 40
± 80

Sp

25

BOULDER Np Hα BOULDER Np SUNSPOTS HALE OBSERVATORIES Np CALCIUM REPORT

1409 UT

Sp

Sp

25

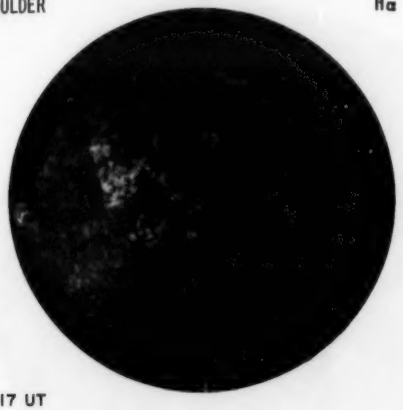
BOULDER

Np

Hα

E

W



1417 UT

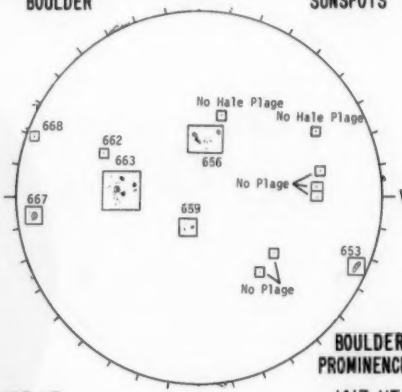
Sp

BOULDER

Np

E

W



1407 UT

Sp

BOULDER PROMINENCES

1417 UT

Sp

SUNSPOTS HALE OBSERVATORIES

Np

NO DATA

E

W

Sp

CALCIUM REPORT

STANFORD

Np

MAGNETOGRAM

Solid - Plus; zero level

Dashed - Minus

E

NO DATA

W

Levels

0 μT

± 50

±100

±200

Sp

MAY 26, 1981 (P=-17.64, B_o=-1.36, L_o=42.15)

SACRAMENTO PEAK Np CORONA 5303 Å

E NO DATA W

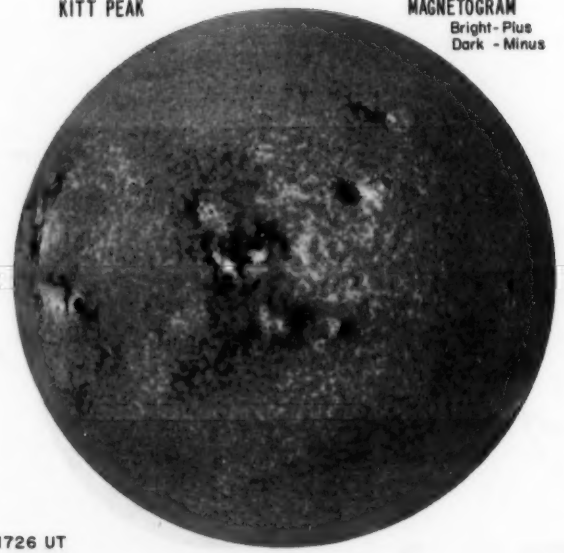
1.15 $R_\odot$
1.35 $R_\odot$
1.55 $R_\odot$

Sp
Np

KITT PEAK Np MAGNETOGRAM Bright-Plus Dark-Minus

MT. WILSON MAGNETOGRAM Solid-Plus Dotted-Minus

DELTAY =
DELTAX =



E W

E NO DATA W

1726 UT

Levels
± 5
± 10
± 20
± 40
± 80

Sp Sp

26

BOULDER Np Hα SAN FERNANDO Np SUNSPOTS HALE OBSERVATORIES Np CALCIUM REPORT

1726 UT

Sp

Sp

26

BOULDER

Np

E

W

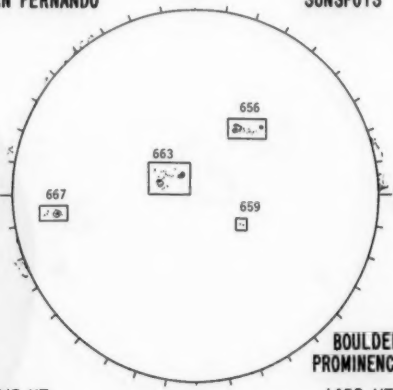
1452 UT

Sp

Hα

SAN FERNANDO

Np



E

W E

1915 UT

Sp

SUNSPOTS

HALE OBSERVATORIES

BOULDER PROMINENCES

1452 UT

Np

NO DATA

E

W

Sp

CALCIUM REPORT

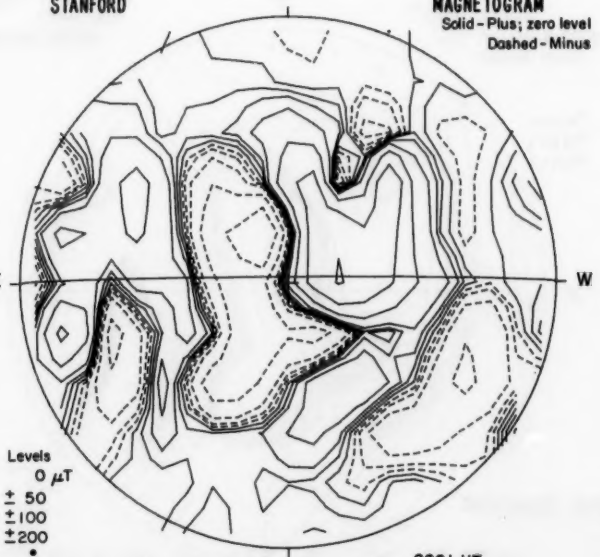
STANFORD

Np

MAGNETOGRAM

Solid - Plus; zero level

Dashed - Minus



E

W

Levels

0 μT

± 50

±100

±200

0001 UT

Sp

MAY 27, 1981 (P=-17.29, B_o=-1.24, L_o=28.91)

SACRAMENTO PEAK Np CORONA 5303 Å

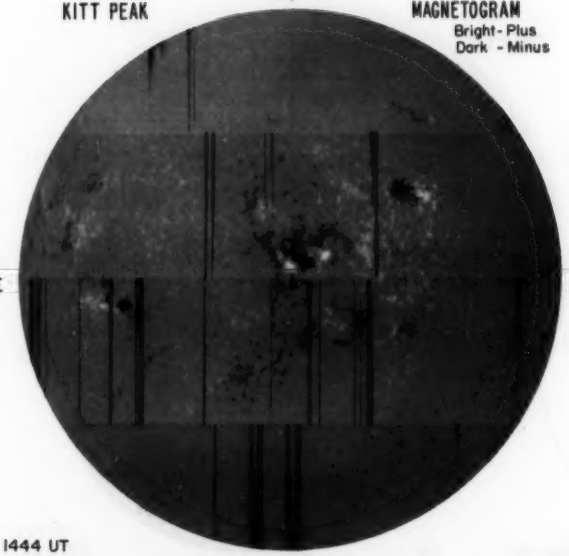
E NO DATA W

1.15 $R_\odot$
1.35 $R_\odot$
1.55 $R_\odot$

Sp

Np

KITT PEAK Np MAGNETOGRAM Bright - Plus Dark - Minus



E W

1444 UT

Sp

MT. WILSON

DELTAY =
DELTAX =

MAGNETOGRAM Solid-Plus Dotted-Minus

E NO DATA W

Levels
± 5
± 10
± 20
± 40
± 80

Sp

27

BOULDER Np Hα SAN FERNANDO Np SUNSPOTS HALE OBSERVATORIES Np CALCIUM REPORT

1444 UT

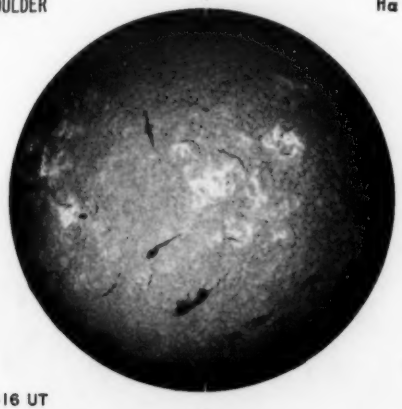
Sp

Sp

27

BOULDER

Np



E

W

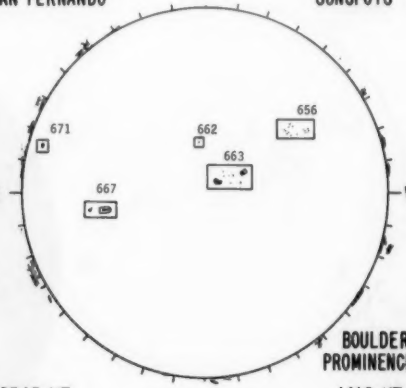
1416 UT

Sp

Hα

SAN FERNANDO

Np



E

W

2345 UT

Sp

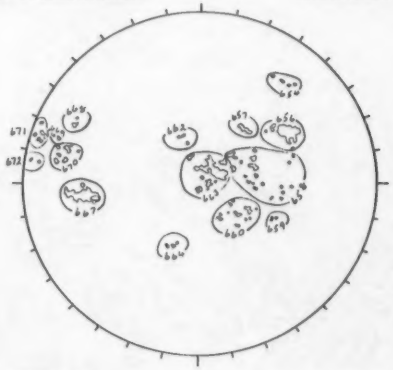
SUNSPOTS

BOULDER PROMINENCES

1416 UT

HALE OBSERVATORIES

Np



E

W

1802 UT

Sp

CALCIUM REPORT

	POOR	JA

54- 0400-3.0
56- 1500-3.5
57- 0300-3.0
58- 1400-3.0
59- 0100-3.0
60- 0700-3.0
62- 0200-2.5
63- 1700-3.0
64- 0200-2.5
67- 1500-3.5
68- 0200-2.5
70- 0700-3.0
71- 0600-3.0
72- 0200-3.0

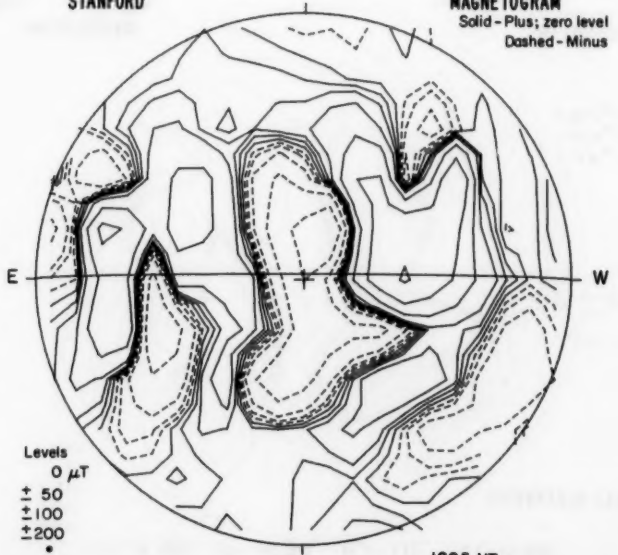
STANFORD

Np

MAGNETOGRAM

Solid - Plus; zero level

Dashed - Minus



E

W

Levels

0 μT

± 50

±100

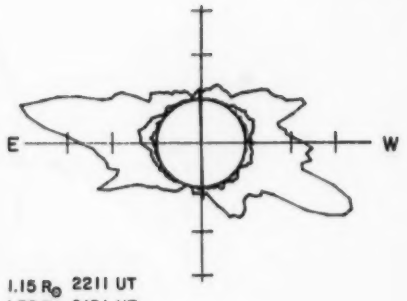
±200

1805 UT

Sp

MAY 28, 1981 (P=-16.94, B_o=-1.12, L_o=15.68)

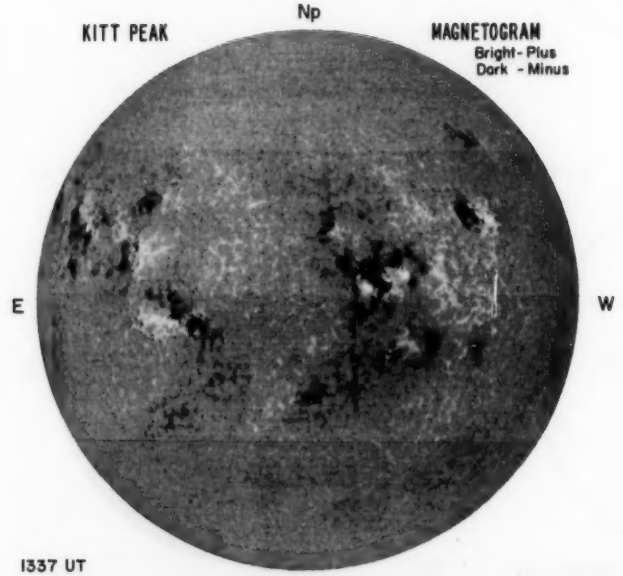
SACRAMENTO PEAK Np CORONA 5303 Å



1.15 $R_\odot$ 2211 UT
1.35 $R_\odot$ 2151 UT
1.55 $R_\odot$ 2200 UT

Sp

KITT PEAK Np MAGNETOGRAM Bright-Plus Dark - Minus



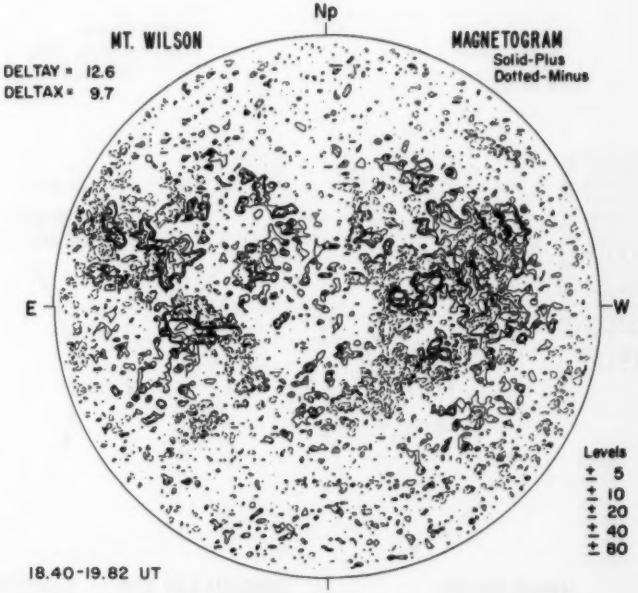
1337 UT

Sp

Np

MT. WILSON MAGNETOGRAM Solid-Plus Dotted-Minus

DELTAY = 12.6
DELTAX = 9.7



18.40-19.82 UT

Sp

28

BOULDER Np Hα SAN FERNANDO Np SUNSPOTS HALE OBSERVATORIES Np CALCIUM REPORT

1337 UT

Sp

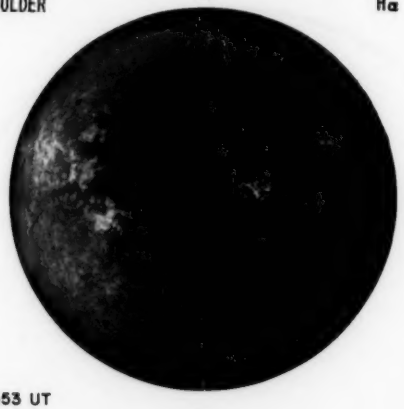
18.40-19.82 UT

Sp

28

BOULDER

Np



E

W

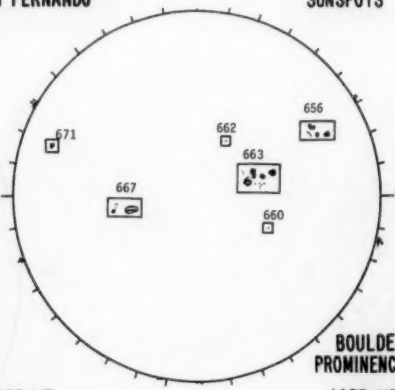
1453 UT

Sp

Hα

SAN FERNANDO

Np



E

W

1958 UT

Sp

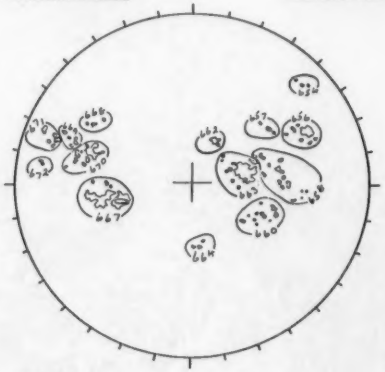
SUNSPOTS

BOULDER PROMINENCES

1453 UT

HALE OBSERVATORIES

Np



E

W

1625 UT

Sp

CALCIUM REPORT

FAIR	JA

54- 0300-3.0
56- 1100-3.5
57- 0200-3.0
58- 1000-3.5
60- 0600-3.0
62- 0200-3.0
63- 1800-3.5
64- 0200-3.0
67- 1900-3.5
68- 0200-3.0
69- 0400-3.0
70- 1000-3.0
71- 0600-2.5
72- 0200-3.0

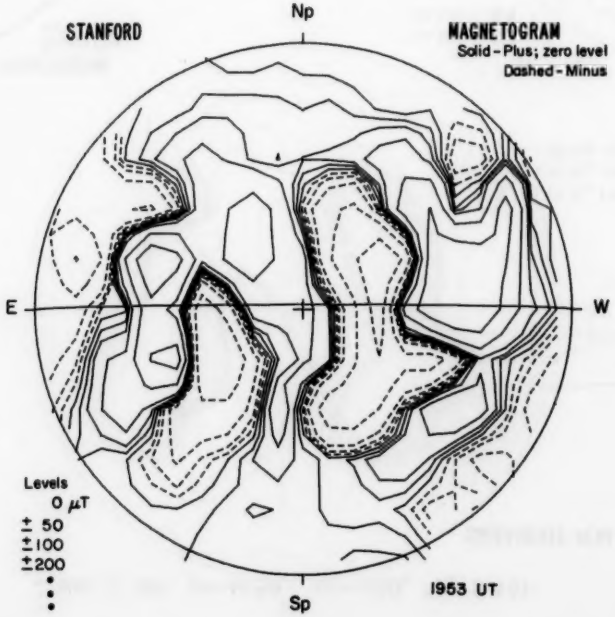
STANFORD

Np

MAGNETOGRAM

Solid - Plus; zero level

Dashed - Minus



E

W

Levels

0 μT

± 50

±100

±200

•

•

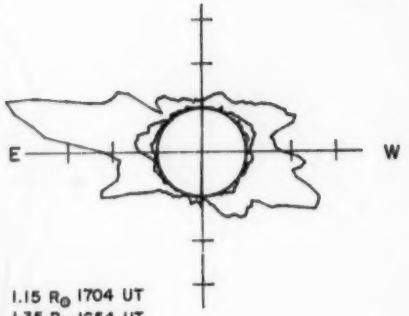
•

1953 UT

Sp

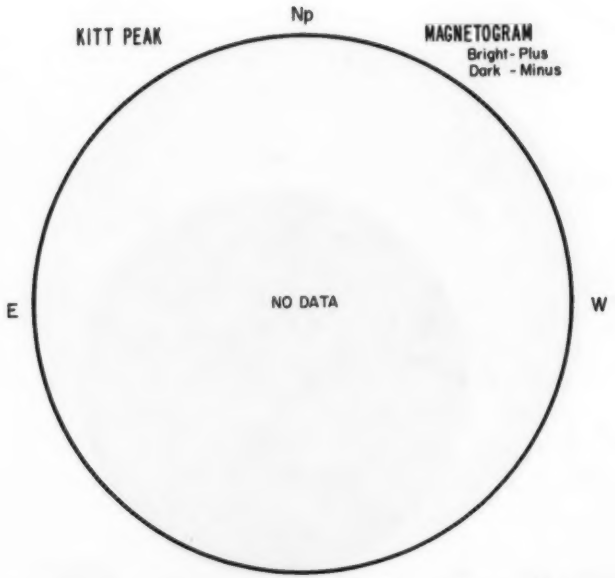
MAY 29, 1981 (P=-16.59, B_o=-1.00, L_o=2.45)

SACRAMENTO PEAK Np CORONA 5303 Å



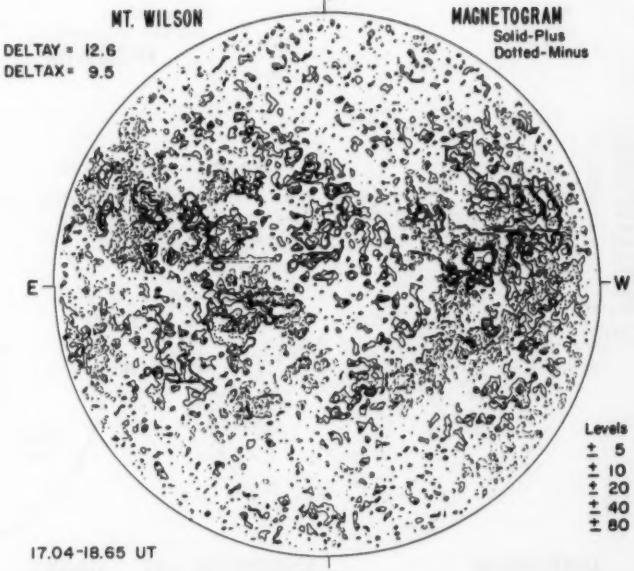
1.15 $R_\odot$ 1704 UT
1.35 $R_\odot$ 1654 UT
1.55 $R_\odot$ 1712 UT

KITT PEAK Np MAGNETOGRAM Bright-Plus Dark-Minus



Sp Np MT. WILSON MAGNETOGRAM Solid-Plus Dotted-Minus

DELTAY = 12.6
DELTAX = 9.5



17.04-18.65 UT

29

BOULDER Np Hα SAN FERNANDO Np SUNSPOTS HALE OBSERVATORIES Np CALCIUM REPORT

Sp

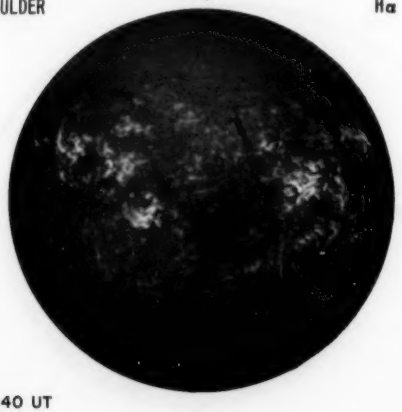
Sp

29

BOULDER

Np

Hα



E

W

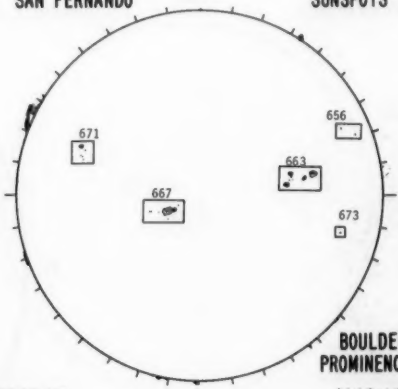
1440 UT

Sp

SAN FERNANDO

Np

SUNSPOTS



E

W

2045 UT

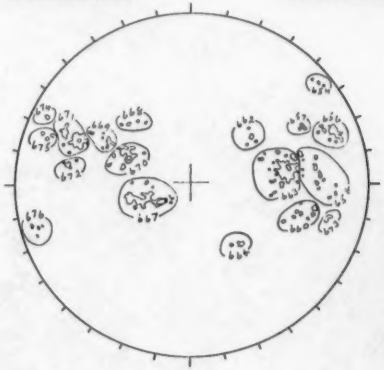
Sp

BOULDER PROMINENCES

1440 UT

HALE OBSERVATORIES

Np



E

W

1757 UT

Sp

CALCIUM REPORT

	GOOD	JA

54- 0300-2.5
56- 1100-3.5
57- 0200-3.0
58- 1300-3.0
60- 0600-3.0
62- 0200-3.0
63- 2200-3.5
64- 0200-3.0
67- 1400-3.5
68- 0200-3.0
69- 0500-3.0
70- 0800-3.0
71- 1600-3.0
72- 0300-3.0
73- 0200-3.5
74- 0200-2.5
75- 0300-2.5

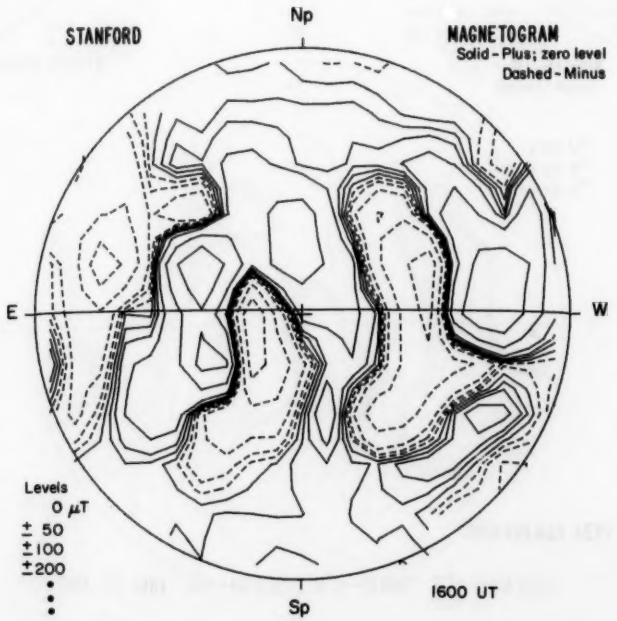
STANFORD

Np

MAGNETOGRAM

Solid - Plus; zero level

Dashed - Minus



E

W

Levels

0 μT

± 50

±100

±200

1600 UT

Sp

MAY 30, 1981 (P=-16.23, B_o=-0.88, L_o=349.22)

SACRAMENTO PEAK Np CORONA 5303 Å

E NO DATA W

1.15 $R_\odot$
1.35 $R_\odot$
1.55 $R_\odot$

KITT PEAK Np MAGNETOGRAM Bright-Plus Dark-Minus

E NO DATA W

Sp

Sp Np

MT. WILSON MAGNETOGRAM Solid-Plus Dotted-Minus

DELTAY = 12.6
DELTAX = 9.7

E W

Levels
± 5
± 10
± 20
± 40
± 80

15.93-16.99 UT

Sp

30

BOULDER Np Hα SAN FERNANDO Np SUNSPOTS HALE OBSERVATORIES Np CALCIUM REPORT

15.93-16.99 UT

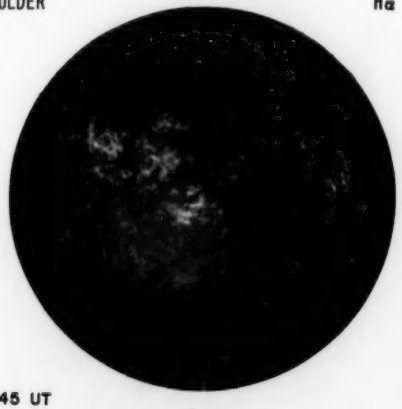
Sp

30

BOULDER

Np

Hα



E

W

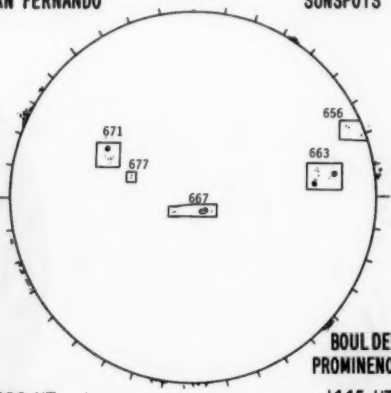
1445 UT

Sp

SAN FERNANDO

Np

SUNSPOTS



E

W

1800 UT

Sp

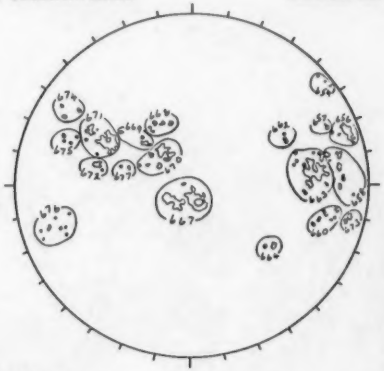
BOULDER PROMINENCES

1445 UT

HALE OBSERVATORIES

Np

CALCIUM REPORT



E

W

1628 UT

Sp

GOOD	JA

56- 1100-3.5
57- 0100-2.5
58- 0800-3.0
60- 0600-3.0
62- 0200-3.0
63- 2000-3.5
64- 0200-3.0
67- 1500-3.5
68- 0400-3.0
69- 0300-3.0
70- 0800-3.0
71- 1500-3.0
72- 0200-3.0
73- 0200-3.5
77- 0100-2.5

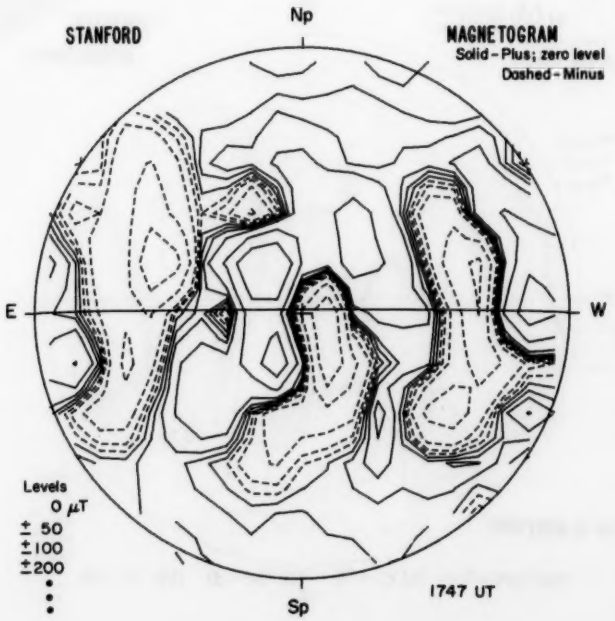
STANFORD

Np

MAGNETOGRAM

Solid - Plus; zero level

Dashed - Minus



E

W

Levels

0 μT

± 50

±100

±200

•

•

•

1747 UT

Sp

MAY 31, 1981 (P=-15.86, B_o=-0.76, L_o=335.98)

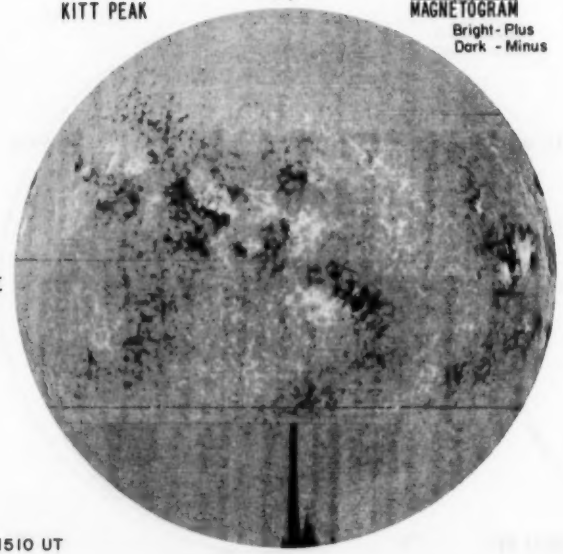
SACRAMENTO PEAK Np CORONA 5303 Å

E W

1.15 $R_\odot$ 1438 UT
1.35 $R_\odot$ 1417 UT
1.55 $R_\odot$ 1427 UT

Sp

KITT PEAK Np MAGNETOGRAM Bright - Plus Dark - Minus



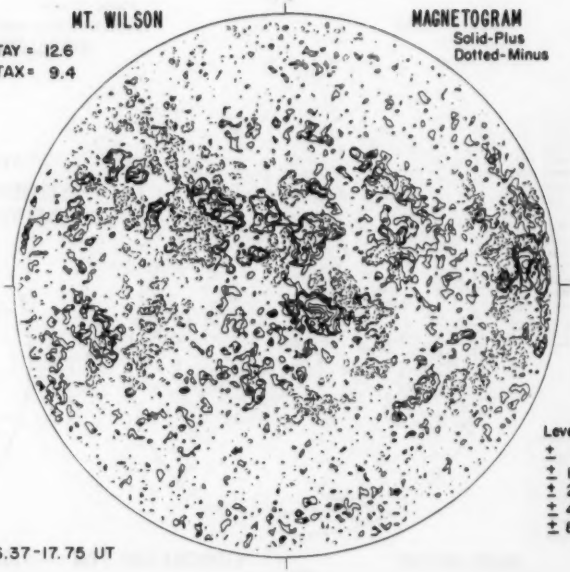
E W

1510 UT

Sp

MT. WILSON Np MAGNETOGRAM Solid-Plus Dotted-Minus

DELTAY = 12.6
DELTAX = 9.4



E W

Levels ± 5 ± 10 ± 20 ± 40 ± 80

16.37-17.75 UT

Sp

31

BOULDER Np Hα SAN FERNANDO Np SUNSPOTS HALE OBSERVATORIES Np CALCIUM REPORT

1510 UT

Sp

Sp

31

BOULDER

Np

Hα

E

W

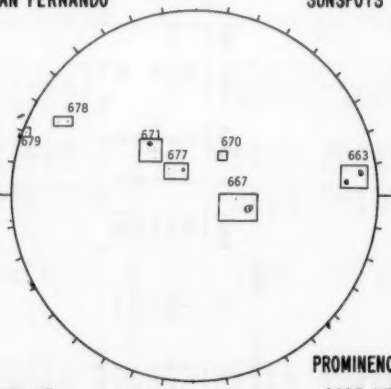
1425 UT

Sp

SAN FERNANDO

Np

SUNSPOTS



E

W

2115 UT

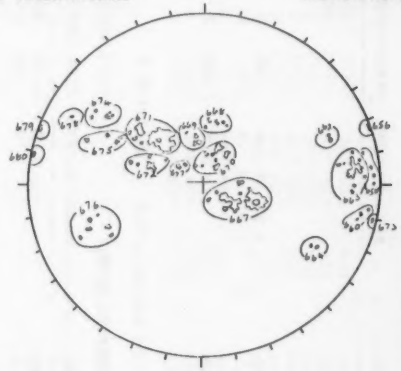
Sp

PROMINENCES

1425 UT

HALE OBSERVATORIES

Np



E

W

1727 UT

Sp

CALCIUM REPORT

GOOD	JA

56- 0300-3.5
58- 0300-3.0
62- 0200-3.0
63- 1200-3.5
64- 0200-3.0
67- 1800-3.5
68- 0400-3.0
69- 0300-3.0
70- 0800-3.0
71- 2400-3.5
72- 0400-3.0
73- 0100-2.5
74- 0400-3.0
75- 0400-3.0
77- 0200-3.0
78- 0100-2.5
79- 0300-3.0
80- 0200-2.5

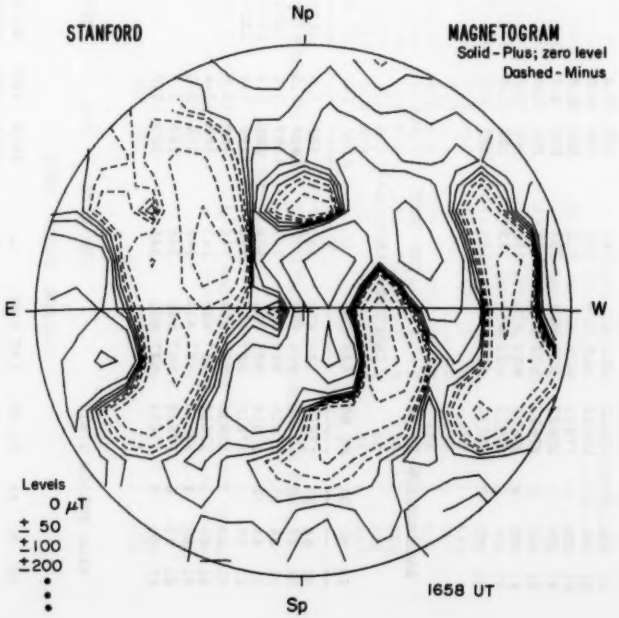
STANFORD

Np

MAGNETOGRAM

Solid - Plus; zero level

Dashed - Minus



E

W

Levels

0 μT

± 50

±100

±200

•

•

•

Sp

1658 UT

REGIONS OF SOLAR ACTIVITY

MAY 1981

HALE REGION 17615 CMP DATE 1.8

			CALCIUM PLAGE DATA						SUNSPOT DATA								
YR	MO	DA	HL NO.	LAT	CMD	L	AREA	INT	MW NO.	LAT	CMD	L	MAG.	H	STA	AREA	CNT	CLASS
81	04	25	17615	N11	E78	5	200	2.0										
81	04	27	17615	N14	E57	0	400	2.5										
81	04	28	17615	N14	E41	2	300	3.0										
81	04	29	17615	N13	E26	4	200	3.0										
81	04	30	17615	N13	E14	2	100	3.0										
81	05	1	17615	N12	E01	2	400	3.0	22255	N11	E02	2	(B)	3	H	30	4	BXO
81	05	2	17615	N12	W14	4	200	3.0	22255	N12	W11	2	(B)	3	H		1	AXX
81	05	3	17615	N12	W26	2	100	3.0										
81	05	4	17615	N12	W39	2	100	3.0		N11	W39				P	10	3	AXX

HALE REGION 17622 CMP DATE 2.5 RETURN OF FRONT HALF OF REGION 17560 ROTATION 2

			CALCIUM PLAGE DATA						SUNSPOT DATA								
YR	MO	DA	HL NO.	LAT	CMD	L	AREA	INT	MW NO.	LAT	CMD	L	MAG.	H	STA	AREA	CNT	CLASS
81	04	29	17622	N18	E38	352	200	3.0		N20	E48				B	70	1	HSX
81	04	30	17622	N18	E25	351	300	3.0		N20	E34				B	80	1	HSX
81	05	1	17622	N20	E11	352	400	3.0										
81	05	2	17622	N20	W03	353	400	3.0		N20	W01				H		1	AXX
81	05	3	17622	N20	W14	350	300	2.5		N20	W05				P	130	1	HSX
81	05	4	17622	N22	W28	351	300	2.0		N19	W28				P	120	1	HKX
81	05	6	17622	N22	W56	353	200	2.0										
81	05	7	17622	N22	W68	351	200	1.5										

HALE REGION 17616 CMP DATE 3.0

			CALCIUM PLAGE DATA						SUNSPOT DATA								
YR	MO	DA	HL NO.	LAT	CMD	L	AREA	INT	MW NO.	LAT	CMD	L	MAG.	H	STA	AREA	CNT	CLASS
81	04	27	17616	N04	E70	347	300	2.5	22245	N04	E74	343	AP	1	H	10	2	BXO
81	04	28	17616	N06	E64	339	1000	3.0	22245	N04	E61	343	(AP)	3	H	20	1	AXX
81	04	29	17616	N06	E48	342	1300	3.0	22245	N05	E46	345	(AP)	3	H	10	1	AXX
81	04	30	17616	N06	E32	344	300	3.0	22245	N05	E33	344	(AP)	3	H		1	AXX
81	05	1	17616	N07	E17	346	300	3.0	22245	N04	E20	344	(AP)	3	B	20	3	BXO
81	05	2	17616	N07	E04	346	300	2.5		N05	E14				L		3	BXO
81	05	3	17616	N07	W07	343	300	3.0										
81	05	4	17616	N07	W23	346	400	3.0										
81	05	6	17616	N07	W49	346	100	2.5										
81	05	7	17616	N07	W63	346	100	2.0										

HALE REGION 17617 CMP DATE 3.4 RETURN OF REGION 17561 ROTATION 2

			CALCIUM PLAGE DATA						SUNSPOT DATA								
YR	MO	DA	HL NO.	LAT	CMD	L	AREA	INT	MW NO.	LAT	CMD	L	MAG.	H	STA	AREA	CNT	CLASS
81	04	27	17617	S22	E72	345	200	2.5										
81	04	28	17617	S22	E64	339	500	3.0										
81	04	29	17617	S22	E48	342	600	3.0										
81	04	30	17617	S22	E35	341	400	3.0										
81	05	1	17617	S20	E22	341	600	3.0	22256	S22	E22	342	(AP)	3	B	10	3	BXO
81	05	2	17617	S21	E08	342	600	2.5		S23	E09				B	10	2	AXX
81	05	3	17617	S21	W05	341	500	2.5										
81	05	4	17617	S21	W17	340	400	3.0										
81	05	6	17617	S21	W42	339	300	2.5										
81	05	7	17617	S21	W56	339	200	2.0										
81	05	8	17617	S22	W68	338	200	2.0		S21	W67				B		1	AXX
81	05	9	17617	S22	W78	336	100	1.0										

REGIONS OF SOLAR ACTIVITY

MAY 1981

HALE REGION 17621 CMP DATE 4.0

				CALCIUM PLAGE DATA						SUNSPOT DATA								
YR	MO	DA	HL NO.	LAT	CMD	L	AREA	INT	MW NO.	LAT	CMD	L	MAG.	H	STA	AREA	CNT	CLASS
81	04	29	17621	S08	E56	334	100	3.0	22250	S08	E57	334	(B)	3	H		1	AXX
81	04	30	17621	S07	E43	333	100	3.0	22250	S07	E45	332	(B)	4	H	60	6	DAO
81	05	1	17621	S07	E29	334	400	3.0	22250	S07	E33	331	(B)	4	H	70	8	CSO
81	05	2	17621	S07	E15	335	400	3.0	22250	S07	E17	334	(B)	4	H	60	12	DRO
81	05	3	17621	S07	E03	333	400	3.0	22250	S07	E04	333	(B)	4	H	90	15	DAO
81	05	4	17621	S07	W12	335	600	3.0		S07	W10				H	80	9	DAO
81	05	5	17621						22250	S07	W23	334	(B)	4	B	130	3	DSO
81	05	6	17621	S07	W37	334	300	3.0	22250	S07	W37	335	(BP)	3	H	30	1	HSX
81	05	7	17621	S06	W53	336	400	3.0	22250	S07	W55	340	(AP)	4	H	20	2	AXX
81	05	8	17621	S06	W65	335	400	3.0	22250	S06	W68	340	(AP)	3	H	20	1	HRX
81	05	9	17621	S06	W77	335	200	2.5		S07	W75				L		1	AXX

HALE REGION 17619 CMP DATE 4.1 RETURN OF REAR HALF OF REGION 17566 ROTATION 2

				CALCIUM PLAGE DATA						SUNSPOT DATA								
YR	MO	DA	HL NO.	LAT	CMD	L	AREA	INT	MW NO.	LAT	CMD	L	MAG.	H	STA	AREA	CNT	CLASS
81	04	27	17619						22246	N20	E75	342	AP	1	H		1	HSX
81	04	28	17619	N19	E60	343	700	2.5	22246	N21	E62	342	(AP)	4	H	80	1	HSX
81	04	29	17619	N19	E50	340	800	3.0	22246	N21	E49	342	(AP)	4	H	70	1	HAX
81	04	30	17619	N19	E40	336	400	3.0	22246	N21	E36	341	(AP)	4	H	100	1	HSX
81	05	1	17619	N20	E28	335	500	3.0	22246	N20	E23	341	(AP)	4	H	100	1	HSX
81	05	2	17619	N19	E15	335	800	3.0	22246	N20	E10	341	(AP)	4	H	100	1	HSX
81	05	3	17619	N20	E04	332	700	3.0	22246	N20	W04	341	(AP)	4	H	100	1	HSX
81	05	4	17619	N20	W11	334	700	3.0		N20	W11				H	130	5	CSO
81	05	5	17619						22246	N19	W28	339	(BP)	5	B	100	1	HSX
81	05	6	17619	N20	W40	337	600	3.0	22246	N19	W42	340	(AP)	4	H	70	1	HSX
81	05	7	17619	N20	W50	333	300	3.0	22246	N19	W55	340	(AP)	5	H	140	1	HSX
81	05	8	17619	N21	W64	334	300	2.5	22246	N20	W68	340	(AP)	4	H	80	1	HAX
81	05	9	17619	N21	W75	333	100	2.0	22246	N20	W80	339	AP	2	H	80	1	HSX

HALE REGION 17623 CMP DATE 4.3 RETURN OF FRONT OF 17567, REAR 17562 ROTATIONS 3 AND 2

				CALCIUM PLAGE DATA						SUNSPOT DATA								
YR	MO	DA	HL NO.	LAT	CMD	L	AREA	INT	MW NO.	LAT	CMD	L	MAG.	H	STA	AREA	CNT	CLASS
81	04	30	17623	N05	E49	327	500	3.0		N07	E57				H	60	1	HAX
81	05	1	17623	N06	E31	332	900	3.0										
81	05	2	17623	N06	E18	332	500	3.0		N08	E16				L		5	BXO
81	05	3	17623	N06	E06	330	400	3.0		N07	E04				R	10	1	AXX
81	05	4	17623	N05	W06	329	800	3.0										
81	05	6	17623	N05	W34	331	400	3.0										
81	05	7	17623	N07	W47	330	100	3.0										

HALE REGION 17632 CMP DATE 4.7

				CALCIUM PLAGE DATA						SUNSPOT DATA								
YR	MO	DA	HL NO.	LAT	CMD	L	AREA	INT	MW NO.	LAT	CMD	L	MAG.	H	STA	AREA	CNT	CLASS
81	05	3	17632	S06	E08	328	100	2.0		S07	E05				H	90	15	DAO
81	05	4	17632	S06	W01	324	100	2.0		S07	W10				H	80	9	DAO
81	05	6	17632	S05	W28	325	100	3.0		S07	W30				L	60	7	DSO
81	05	7	17632	S05	W44	327	200	3.0	22269	S06	W42	327	(B)	3	H	10	2	BXO
81	05	8	17632	S04	W57	327	200	3.0		S04	W55				H	20	2	AXX
81	05	9	17632	S04	W68	326	100	2.5		S07	W75				L		1	AXX

REGIONS OF SOLAR ACTIVITY

MAY 1981

HALE REGION 17624 CMP DATE 5.1 RETURN OF SOUTHERN PART 17567,ALL 17568 ROTATION 3

CALCIUM PLAGE DATA

YR	MO	DA	HL NO.	LAT CMD	L	AREA	INT
81	04	29	17624				
81	04	30	17624	N07 E65	311	400	3.0
81	05	1	17624	N08 E47	316	1200	3.5
81	05	2	17624	N08 E32	318	1200	3.5
81	05	3	17624	N07 E19	317	1800	4.0
81	05	4	17624	N07 E05	318	2200	4.0
81	05	5	17624				
81	05	6	17624	N06 W23	320	2600	4.0
81	05	7	17624	N06 W35	318	2600	4.0
81	05	8	17624	N06 W48	318	2700	3.5
81	05	9	17624	N06 W61	319	2500	3.5
81	05	10	17624	N06 W76	320	1300	3.0

SUNSPOT DATA

MW NO.	LAT CMD	L	MAG.	H	STA	AREA	CNT	CLASS
22251	N08 E71	320	(AP)	4	H	30	1	HSX
22251	N07 E57	320	(AP)	4	H	60	1	HAX
22251	N07 E47	317	(B)	4	H	80	9	CAO
22251	N07 E35	316	(B)	4	H	300	21	EAI
22251	N07 E20	317	(B)	4	H	310	48	EAI
	N07 E08				H	330	37	EKI
22251	N07 W06	317	(B)	5	B	360	20	DAI
22251	N06 W19	317	(BY)	4	H	310	35	EKI
22251	N05 W34	319	(BY)	4	H	470	33	EKI
22251	N05 W46	318	(BY)	5	H	300	32	ESI
22251	N05 W60	319	(BY)	3	H	160	22	FAI
22251	N06 W80	326	(AP)	2	B	40	3	BXO

HALE REGION 17620 CMP DATE 5.6

CALCIUM PLAGE DATA

YR	MO	DA	HL NO.	LAT CMD	L	AREA	INT
81	04	29	17620	N15 E73	317	300	3.5
81	04	30	17620	N15 E65	311	500	3.0
81	05	1	17620	N17 E55	308	1700	3.5
81	05	2	17620	N16 E38	312	2200	3.5
81	05	3	17620	N16 E26	310	3400	3.5
81	05	4	17620	N16 E12	311	3100	3.5
81	05	5	17620				
81	05	6	17620	N16 W15	312	3200	3.5
81	05	7	17620	N16 W27	310	3500	3.5
81	05	8	17620	N16 W41	311	2800	3.5
81	05	9	17620	N16 W53	311	2700	3.5
81	05	10	17620	N17 W69	313	2600	3.0
81	05	11	17620				

SUNSPOT DATA

MW NO.	LAT CMD	L	MAG.	H	STA	AREA	CNT	CLASS
22252	N18 E80	311	(AP)	3	H	70	1	HHX
22252	N17 E63	314	(AP)	4	H	210	7	DKO
22252	N17 E52	312	(BP)	4	H	280	10	DHO
22252	N16 E37	314	(D)	5	H	390	18	EKI
22252	N17 E25	312	(BY)	5	H	360	19	EKO
	N15 E11				H	320	23	EKI
22252	N16 W01	312	(D)	5	B	380	15	DKI
22252	N16 W14	312	(D)	5	H	290	28	FKI
22252	N16 W27	312	(BY)	5	H	290	17	EHI
22252	N17 W41	313	(BY)	5	H	220	12	CHO
22252	N15 W55	314	(BY)	3	H	330	12	CHO
22252	N17 W67	313	(BP)	4	B	270	2	CSO
22252	N17 W79	312	(AP)	3	H	150	1	HHX

HALE REGION 17625 CMP DATE 6.3 RETURN OF REGION 17570 ROTATION 2

CALCIUM PLAGE DATA

YR	MO	DA	HL NO.	LAT CMD	L	AREA	INT
81	04	30	17625	N03 E72	304	200	3.0
81	05	1	17625	N07 E61	302	400	3.0
81	05	2	17625	N06 E46	304	500	3.5
81	05	3	17625	N05 E34	302	500	3.5
81	05	4	17625	N05 E23	300	700	3.5
81	05	5	17625				
81	05	6	17625	N06 W06	303	900	3.5
81	05	7	17625	N07 W18	301	1100	3.5
81	05	8	17625	N07 W33	303	1200	3.0
81	05	9	17625	N07 W46	304	900	3.0
81	05	10	17625	N08 W58	302	700	3.0

SUNSPOT DATA

MW NO.	LAT CMD	L	MAG.	H	STA	AREA	CNT	CLASS
22253	N05 E71	306	(AP)	4	H	20	1	HAX
22253	N05 E58	306	(AP)	4	H	40	2	DSO
22253	N07 E46	305	(B)	4	H	70	5	DAO
22253	N07 E31	306	(B)	4	H	30	3	CAO
	N04 E20				H	10	4	BXO
22253	N07 E06	305	(AP)	2	B	20	2	CSO
	N03 W17				B	20	3	CSO
	N07 W43				B	310	41	FKC
	N07 W54				H	20	11	BXO
	N05 W68				L	60	6	CSO

HALE REGION 17628 CMP DATE 7.1

CALCIUM PLAGE DATA

YR	MO	DA	HL NO.	LAT CMD	L	AREA	INT
81	05	1	17628	N13 E60	303	500	3.0
81	05	2	17628	N10 E52	298	1200	3.0
81	05	3	17628	N10 E38	298	600	3.0
81	05	4	17628	N10 E25	298	1200	3.0
81	05	5	17628				
81	05	6	17628	N10 E04	293	500	3.0
81	05	7	17628	N11 W08	291	600	3.5
81	05	8	17628	N12 W23	293	500	3.0
81	05	9	17628	N12 W34	292	300	3.0
81	05	10	17628	N12 W45	289	500	3.0
81	05	11	17628				
81	05	12	17628	N12 W74	291	500	3.0

SUNSPOT DATA

MW NO.	LAT CMD	L	MAG.	H	STA	AREA	CNT	CLASS
	N16 E53				H	280	10	DHO
22259	N09 E60	291	(AP)	3	H	30	4	CRO
22259	N10 E45	292	(B)	4	B	60	7	CAI
	N08 E22				H	10	5	BXO
22259	N10 E19	292	(BP)	4	B	80	3	CSO
22259	N10 E07	291	(BP)	3	H	30	4	CSO
22259	N10 W05	290	(AP)	4	H	30	5	CSO
22259	N12 W17	289	(AP)	4	H	30	4	CSO
22259	N12 W31	290	(AP)	3	H		1	AXX
22259	N11 W45	291	(B)	3	B	20	2	BXO
22259	N11 W58	291	(B)	4	H	40	5	DSO
22259	N11 W72	291	(BP)	3	H	40	2	CSO

REGIONS OF SOLAR ACTIVITY

MAY 1981

HALE REGION 17629 CMP DATE 7.2 RETURN OF EXTREME NW TIP OF 17571 ROTATION 3

				CALCIUM PLAGE DATA					SUNSPOT DATA								
YR	MO	DA	HL NO.	LAT	CMD	L	AREA	INT	MW NO.	LAT	CMD	L	MAG.	H	STA	AREA	CNT	CLASS
81	05	1	17629						22258	S11	E76	288	(AP)	3	H	10	1	AXX
81	05	2	17629	S07	E63	287	400	2.5	22258	S11	E62	289	(AP)	3	H	20	2	AXX
81	05	3	17629	S06	E54	282	500	2.5	22258	S11	E49	288	(AP)	3	H	10	1	AXX
81	05	4	17629	S06	E40	283	500	2.5		S07	E35				H	10	2	BXO
81	05	6	17629	S06	E06	291	300	2.5										
81	05	7	17629	S06	W07	290	300	2.5										
81	05	8	17629	S06	W24	294	300	2.5										
81	05	9	17629	S06	W35	293	200	2.0										
81	05	10	17629	S06	W46	290	100	1.5										

HALE REGION 17627 CMP DATE 7.3 RETURN OF REGION 17569 ROTATION 2

				CALCIUM PLAGE DATA					SUNSPOT DATA								
YR	MO	DA	HL NO.	LAT	CMD	L	AREA	INT	MW NO.	LAT	CMD	L	MAG.	H	STA	AREA	CNT	CLASS
81	05	1	17627	N20	E70	293	700	3.0	22257	N16	E75	289	(AP)	2	R	20	1	AXX
81	05	2	17627	N18	E58	292	1100	3.5	22257	N16	E60	291	(AP)	2	H	10	2	AXX
81	05	3	17627	N18	E47	289	2000	3.5	22257	N17	E47	290	(AP)	3	B	10	1	AXX
81	05	4	17627	N18	E35	288	2000	3.5		N16	E37				R	20	1	AXX
81	05	5	17627						22257	N17	E23	288	(BP)	4	B	90	3	CSO
81	05	6	17627	N18	E08	289	2900	3.5	22257	N16	E07	291	(AF)	4	H	50	5	CSO
81	05	7	17627	N18	W06	289	2600	3.5	22257	N15	W06	291	(BP)	4	H	30	3	CAO
81	05	8	17627	N20	W18	288	1900	3.5	22257	N17	W20	292	(BP)	4	H	20	1	HSX
81	05	9	17627	N20	W32	290	1600	3.0	22257	N17	W32	291	(BP)	4	H	30	1	HSX
81	05	10	17627	N20	W44	288	1700	3.0	22257	N16	W45	291	(AF)	4	B	20	1	HSX
81	05	11	17627						22257	N17	W58	291	(AF)	3	H		1	AXX
81	05	12	17627	N20	W68	285	600	2.5	22257	N17	W72	291	(AF)	2	H		1	AXX

HALE REGION 17630 CMP DATE 7.5 RETURN OF SOUTHERN PART OF 17571 ROTATION 3

				CALCIUM PLAGE DATA					SUNSPOT DATA								
YR	MO	DA	HL NO.	LAT	CMD	L	AREA	INT	MW NO.	LAT	CMD	L	MAG.	H	STA	AREA	CNT	CLASS
81	05	2	17630	S43	E62	288	300	2.5										
81	05	3	17630	S13	E52	284	600	3.0		S12	E51				H	10	1	AXX
81	05	4	17630	S13	E36	287	600	3.0		S12	E37				H	10	1	AXX
81	05	6	17630	S14	E13	284	500	3.0		S19	E14				H	10	4	BXO
81	05	7	17630	S14	W03	286	600	3.0										
81	05	8	17630	S13	W15	285	600	3.0										
81	05	9	17630	S13	W27	285	600	2.5										
81	05	10	17630	S12	W40	284	400	2.5										
81	05	12	17630	S11	W65	282	300	1.5										

HALE REGION 17633 CMP DATE 7.5

				CALCIUM PLAGE DATA					SUNSPOT DATA								
YR	MO	DA	HL NO.	LAT	CMD	L	AREA	INT	MW NO.	LAT	CMD	L	MAG.	H	STA	AREA	CNT	CLASS
81	05	4	17633	S19	E41	282	200	2.5		S19	E43				H		1	AXX
81	05	5	17633						22261	S19	E28	283	(B)	2	B	40	4	BXO
81	05	6	17633	S19	E13	284	200	3.0	22261	S19	E14	284	(B)	3	H	10	4	BXO
81	05	7	17633	S18	W03	286	200	3.0	22261	S18	E01	284	(B)	2				
81	05	8	17633	S18	W14	284	200	3.0		S20	W04				M	110	7	DSO
81	05	9	17633	S18	W25	283	100	3.0		S18	W19				P	30	2	CSO
81	05	10	17633	S18	W38	282	100	2.5										

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HALE REGION 17635 CMP DATE 8.3 RETURN OF TRAILING PART OF 17571 ROTATION 3

CALCIUM PLAGE DATA								SUNSPOT DATA								
YR	MO	DA	HL NO.	LAT CMD	L	AREA	INT	MW NO.	LAT CMD	L	MAG.	H	STA	AREA	CNT	CLASS
81	05	6	17635	S07 E22	275	300	3.5	22268	S07 E24	274	(AF)	3	H		1	AXX
81	05	7	17635	S07 E08	275	300	3.0	22268	S07 E10	275	(AP)	3	H	10	4	BXO
81	05	8	17635	S06 W06	276	200	3.5		S07 W04				B		2	CXO
81	05	9	17635	S06 W16	274	200	2.5									
81	05	10	17635	S07 W29	273	200	2.0									
81	05	12	17635	S07 W59	276	100	1.5									

HALE REGION 17631 CMP DATE 8.6

CALCIUM PLAGE DATA								SUNSPOT DATA								
YR	MO	DA	HL NO.	LAT CMD	L	AREA	INT	MW NO.	LAT CMD	L	MAG.	H	STA	AREA	CNT	CLASS
81	05	2	17631	S20 E78	272	200	3.0		S22 E80				H	20	3	BXO
81	05	3	17631	S19 E64	272	400	3.0	22260	S20 E70	267	(B)	3	B	120	2	DSO
81	05	4	17631	S20 E52	271	500	3.0		S22 E55				H	80	1	CSO
81	05	5	17631					22260	S20 E42	269	(B)	3	B	50	3	CSO
81	05	6	17631	S21 E26	271	1000	3.5	22260	S21 E29	269	(B)	4	H	60	11	DSI
81	05	7	17631	S18 E12	271	1000	3.0	22260	S21 E15	270	(B)	5	H	130	13	DAO
81	05	8	17631	S18 W03	273	700	3.0	22260	S20 E02	270	(B)	4	H	80	16	EAO
81	05	9	17631	S18 W14	272	700	3.0	22260	S20 W12	271	(BY)	4	H	80	14	EAO
81	05	10	17631	S18 W26	270	900	3.0	22260	S20 W25	271	(BF)	3	B	90	13	CAI
81	05	11	17631					22260	S20 W38	271	(B)	3	H	10	1	AXX
81	05	12	17631	S18 W53	270	800	3.0	22260	S20 W51	270	(B)	2	R	20	5	BXO
81	05	13	17631	S19 W62	267	700	2.5	22260	S18 W70	276	(AP)	2				
81	05	14	17631	S21 W72	263	200	2.5									

HALE REGION 17634 CMP DATE 9.0 RETURN OF REGION 17572 ROTATION 2

CALCIUM PLAGE DATA								SUNSPOT DATA								
YR	MO	DA	HL NO.	LAT CMD	L	AREA	INT	MW NO.	LAT CMD	L	MAG.	H	STA	AREA	CNT	CLASS
81	05	5	17634					22262	N23 E32	279	(AF)	2	P	10	2	AXX
81	05	5	17634					22263	N19 E45	266	(AP)	2	P	10	1	AXX
81	05	6	17634	N16 E26	271	200	2.5	22263	N20 E31	267	B	1				
81	05	7	17634	N17 E15	268	400	3.0	22263	N20 E17	268	(B)	3	H	20	6	BXO
81	05	8	17634	N18 E02	268	800	3.0	22263	N21 E04	268	(B)	3	H	40	11	BXO
81	05	9	17634	N20 W13	271	500	3.0	22263	N20 W09	268	(B)	3	H	20	6	BXO
81	05	10	17634	N19 W27	271	700	3.0	22274	N24 W34	280	(AF)	2	B	20	2	BXO
81	05	10	17634	N19 W27	271	700	3.0	22275	N21 W26	272	(AP)	2	B	20	2	BXO
81	05	11	17634					22275	N21 W40	273	(B)	3	H	10	3	BXO
81	05	12	17634	N21 W52	269	200	3.0	22275	N20 W47	266	(AF)	2	H	10	1	AXX
81	05	13	17634	N21 W68	273	200	2.0									

HALE REGION 17636 CMP DATE 9.9

CALCIUM PLAGE DATA								SUNSPOT DATA								
YR	MO	DA	HL NO.	LAT CMD	L	AREA	INT	MW NO.	LAT CMD	L	MAG.	H	STA	AREA	CNT	CLASS
81	05	6	17636	S25 E44	253	100	2.5		S20 E36				L	50	14	CSO
81	05	7	17636	S25 E31	252	100	2.0									
81	05	8	17636	S24 E18	252	100	2.0									
81	05	9	17636	S22 E03	255	100	1.5	22273	S24 E04	255	(AF)	2				
81	05	10	17636	S22 W12	256	100	2.0	22273	S23 W07	253	(AF)	2				
81	05	11	17636					22273	S22 W22	255	(B)	4	H	20	8	BXO
81	05	12	17636	S22 W36	253	200	3.0	22273	S23 W34	253	(B)	3	H	30	4	BXO
81	05	13	17636	S22 W47	252	200	2.5	22273	S22 W48	254	(B)	2	H	10	1	AXX
81	05	14	17636	S22 W62	253	100	2.5									

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HALE REGION 17642 CMP DATE 10.3

				CALCIUM PLAGE DATA					SUNSPOT DATA								
YR	MO	DA	HL NO.	LAT CMD	L	AREA	INT	MW NO.	LAT CMD	L	MAG.	H	STA	AREA	CNT	CLASS
81	05	10	17642	N07 W05	249	100	2.0	22276	N07 W05	251	(B)	3	B	20	2	BXO
81	05	12	17642	N07 W33	250	200	3.0	22280	N07 W32	251	(AP)	2	H	10	2	BXO
81	05	13	17642	N07 W44	249	400	3.0	22280	N07 W45	251	(B)	3	H	30	5	CRO
81	05	14	17642	N07 W58	249	300	3.0	22280	N08 W59	252	(B)	3	H	30	2	DAO
81	05	15	17642	N10 W55	231	100	3.0	.	N10 W58				H	100	18	DSO

HALE REGION 17645 CMP DATE 10.6

				CALCIUM PLAGE DATA					SUNSPOT DATA								
YR	MO	DA	HL NO.	LAT CMD	L	AREA	INT	MW NO.	LAT CMD	L	MAG.	H	STA	AREA	CNT	CLASS
81	05	12	17645	S05 W29	246	100	2.0	22281	S06 W27	246	(B)	2	P		2	AXX
81	05	13	17645	S05 W40	245	100	2.0	22281	S05 W42	248	(AP)	2				
81	05	14	17645	S05 E55	136	100	2.0									

HALE REGION 17637 CMP DATE 11.0 RETURN OF REGION 17573 ROTATION 2

				CALCIUM PLAGE DATA					SUNSPOT DATA								
YR	MO	DA	HL NO.	LAT CMD	L	AREA	INT	MW NO.	LAT CMD	L	MAG.	H	STA	AREA	CNT	CLASS
81	05	6	17637	N16 E60	237	400	2.5		N13 E61				H	40	3	DSO
81	05	7	17637	N17 E45	238	500	2.5		N15 E49				H	60	3	DAO
81	05	8	17637	N17 E32	238	500	2.5		N15 E35				H	60	3	DAO
81	05	9	17637	N17 E17	241	500	2.5		N14 E23				H	40	6	CSO
81	05	10	17637	N20 E04	240	300	2.0									
81	05	12	17637	N20 W22	239	200	2.0									
81	05	13	17637	N20 W32	237	200	2.0									
81	05	14	17637	N22 W45	236	200	1.5									
81	05	15	17637	N18 W60	236	200	2.0		N17 W57				H	10	1	AXX
81	05	16	17637	N18 W69	236	100	2.0									

HALE REGION 17639 CMP DATE 11.5 RETURN OF REGION 17580 ROTATION 2

				CALCIUM PLAGE DATA					SUNSPOT DATA								
YR	MO	DA	HL NO.	LAT CMD	L	AREA	INT	MW NO.	LAT CMD	L	MAG.	H	STA	AREA	CNT	CLASS
81	05	5	17639					22265	S03 E79	232	(B)	3	P	10	2	BXO
81	05	6	17639	S05 E64	233	700	3.5	22265	S03 E67	231	(B)	3	H	20	6	BXO
81	05	7	17639	S05 E50	233	800	3.5	22265	S05 E53	232	(B)	3	H		1	AXX
81	05	8	17639	S05 E36	234	500	3.0	22271	S05 E28	244	(AP)	2				
81	05	8	17639	S05 E36	234	500	3.0	22265	S04 E43	229	(AP)	3	P	10	1	AXX
81	05	9	17639	S05 E25	233	400	3.5	22265	S05 E26	233	(B)	2	H	10	3	BXO
81	05	10	17639	S05 E12	232	400	3.5	22265	S05 E12	234	(AP)	3	B	20	2	BXO
81	05	11	17639					22265	S04 W02	235	(AP)	4	H	10	5	BXO
81	05	12	17639	S05 W17	234	100	3.5	22265	S05 W12	231	(AF)	2	H	10	2	AXX
81	05	13	17639	S05 W28	233	200	3.0									
81	05	14	17639	S05 W43	234	200	2.5	22290	S06 W35	228	X	1				
81	05	15	17639	S03 W57	233	100	2.0									

HALE REGION 17638 CMP DATE 11.6 RETURN OF REGIONS 17576 AND 17581 ROTATION 2

				CALCIUM PLAGE DATA					SUNSPOT DATA								
YR	MO	DA	HL NO.	LAT CMD	L	AREA	INT	MW NO.	LAT CMD	L	MAG.	H	STA	AREA	CNT	CLASS
81	05	5	17638					22264	N14 E77	234	(AP)	2	B	60	2	CSO
81	05	5	17638					22266	N09 E80	231	(AP)	4	B	90	5	CSO
81	05	6	17638	N07 E64	233	1900	3.5	22266	N10 E69	229	(BP)	4	H	620	8	DKI
81	05	6	17638	N07 E64	233	1900	3.5	22264	N14 E61	237	(AP)	4	H	40	3	DSO
81	05	7	17638	N07 E52	231	4300	3.5	22266	N09 E54	231	(D)	5	H	730	19	DKC
81	05	7	17638	N07 E52	231	4300	3.5	22264	N14 E48	237	(AP)	4	H	60	3	DAO
81	05	8	17638	N07 E37	233	4200	3.5	22266	N10 E41	231	(D)	5	H	710	23	DKC
81	05	8	17638	N07 E37	233	4200	3.5	22264	N14 E36	236	(AP)	4	H	60	3	DAO
81	05	9	17638	N08 E27	231	6200	4.0	22266	N10 E28	231	(D)	5	H	1090	42	EKC

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HALE REGION 17638 (CONT) CMP DATE 11.6 RETURN OF REGIONS 17576 AND 17581 ROTATION 2

			CALCIUM PLAGE DATA						SUNSPOT DATA								
YR	MO	DA	HL NO.	LAT	CMD	L	AREA	INT	MW NO.	LAT	CMD	L	MAG.	H	STA	AREA	CNT	CLASS
81	05	9	17638	N08	E27	231	6200	4.0	22264	N14	E24	235	(AP)	4	H	40	6	CSO
81	05	10	17638	N08	E15	229	200	4.0	22266	N09	E15	231	(D)	4	B	620	32	FKC
81	05	10	17638	N08	E15	229	200	4.0	22264	N13	E08	238	(AP)	4	B	20	1	HSX
81	05	11	17638						22266	N10	E02	231	(D)	4	H	480	63	EKC
81	05	11	17638						22279	N14	E14	219	(AP)	3	H	10	3	BXO
81	05	11	17638						22264	N13	W06	239	(AP)	4	H	20	1	HSX
81	05	12	17638	N10	W15	232	4800	4.0	22266	N10	W13	232	(D)	5	H	370	52	EKC
81	05	12	17638	N10	W15	232	4800	4.0	22279	N14	W01	220	(AF)	2	H	10	3	BXO
81	05	12	17638	N10	W15	232	4800	4.0	22264	N13	W08	227	(AP)	3	H	10	3	BXO
81	05	13	17638	N10	W27	232	5400	3.5	22266	N10	W26	232	(BY)	4	H	340	41	EKI
81	05	13	17638	N10	W27	232	5400	3.5	22264	N13	W21	227	(AP)	3	H	340	41	EKI
81	05	14	17638	N10	W42	233	5000	3.5	22266	N09	W38	231	(B)	4	H	150	28	DAI
81	05	15	17638	N11	W54	230	5100	3.5		N10	W58				H	100	18	DSO
81	05	16	17638	N11	W62	229	2800	3.5	22266	N10	W62	228	(B)	3	H	40	2	CRO
81	05	17	17638	N10	W75	226	1000	2.5		N10	W82				M	20	1	AXX

HALE REGION 17640 CMP DATE 13.4 NEW, IN LOCATION OF REGION 17584

			CALCIUM PLAGE DATA						SUNSPOT DATA								
YR	MO	DA	HL NO.	LAT	CMD	L	AREA	INT	MW NO.	LAT	CMD	L	MAG.	H	STA	AREA	CNT	CLASS
81	05	7	17640	N12	E73	210	300	3.0	22270	N12	E78	207	(AP)	2				
81	05	8	17640	N12	E61	209	700	3.5	22270	N12	E65	207	(B)	3	H	20	3	CAO
81	05	9	17640	N12	E52	206	800	3.0	22270	N12	E50	209	(B)	4	H	100	6	DAO
81	05	10	17640	N12	E36	208	1900	3.0	22270	N12	E37	209	(B)	4	B	150	9	DAO
81	05	11	17640						22270	N12	E23	210	(B)	4	H	160	14	DKO
81	05	12	17640	N13	E10	207	1300	3.5	22282	N19	E13	206	(B)	2	H	10	3	BXO
81	05	12	17640	N13	E10	207	1300	3.5	22270	N12	E09	210	(B)	5	H	190	23	DKO
81	05	13	17640	N13	W04	209	2000	3.0	22282	N19	E02	204	(AF)	2	H	10	1	AXX
81	05	13	17640	N13	W04	209	2000	3.0	22270	N11	W04	210	(B)	4	H	270	12	EHI
81	05	14	17640	N13	W15	206	1400	3.5	22270	N11	W18	211	(B)	5	H	220	9	DHO
81	05	15	17640	N13	W29	205	1800	3.5		N11	W30				H	340	16	EKO
81	05	16	17640	N14	W37	204	2100	3.5	22270	N11	W44	210	(B)	4	H	180	6	EAO
81	05	17	17640	N14	W54	205	1000	3.0	22270	N12	W59	212	(BF)	4	P	230	9	ESO
81	05	18	17640						22270	N12	W68	208	(AF)	3	H	30	4	CSO
81	05	19	17640	N17	W78	206	200	2.5		N12	W73				L	60	3	CSO

HALE REGION 17648 CMP DATE 13.8

			CALCIUM PLAGE DATA						SUNSPOT DATA								
YR	MO	DA	HL NO.	LAT	CMD	L	AREA	INT	MW NO.	LAT	CMD	L	MAG.	H	STA	AREA	CNT	CLASS
81	05	12	17648	S30	E14	203	100	2.5	22283	S30	E15	204	(AP)	3	H	10	1	AXX
81	05	13	17648	S30	E02	203	200	3.0	22283	S30	E02	204	(B)	2	H	10	4	BXO
81	05	14	17648	S30	W12	203	200	3.5	22283	S31	W10	203	(B)	2	H	10	3	AXX
81	05	15	17648	S30	W27	203	300	3.0										
81	05	16	17648	S30	W35	202	300	3.0	22283	S31	W37	203	(AP)	2				
81	05	17	17648	S29	W49	200	200	3.0										
81	05	19	17648	S28	W75	203	100	3.0										

HALE REGION 17641 CMP DATE 14.2 RETURN OF REGION 17587 ROTATION 2

			CALCIUM PLAGE DATA						SUNSPOT DATA								
YR	MO	DA	HL NO.	LAT	CMD	L	AREA	INT	MW NO.	LAT	CMD	L	MAG.	H	STA	AREA	CNT	CLASS
81	05	8	17641	S07	E78	192	400	2.5	22272	S06	E75	197	(AP)	3	H	140	1	HSI
81	05	9	17641	S07	E61	197	400	2.0	22272	S06	E61	198	(AP)	4	H	130	1	HSI
81	05	10	17641	S07	E46	198	700	2.5	22272	S07	E47	199	(BP)	5	B	40	1	HSI
81	05	11	17641						22272	S06	E34	199	(BP)	5	H	120	3	CAO
81	05	12	17641	S07	E17	200	800	2.0	22272	S07	E20	199	(BP)	5	H	100	1	HSI
81	05	13	17641	S07	E07	198	600	2.0	22272	S06	E07	199	(AP)	4	H	100	1	HSI
81	05	14	17641	S07	W07	198	600	2.5	22272	S07	W06	199	(BP)	4	H	80	2	HSI
81	05	15	17641	S07	W23	199	500	2.0		S07	W19				H	90	2	HSI
81	05	16	17641	S07	W30	197	600	2.5	22272	S07	W33	199	(AP)	4	H	100	1	HSI

CONT

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HALE REGION 17641 (CONT) CMP DATE 14.2 RETURN OF REGION 17587 ROTATION 2

CALCIUM PLAGE DATA

YR	MO	DA	HL NO.	LAT	CMD	L	AREA	INT
81	05	17	17641	S07	W44	195	500	2.0
81	05	18	17641					
81	05	19	17641	S05	W68	196	300	2.5
81	05	20	17641					

SUNSPOT DATA

MW NO.	LAT	CMD	L	MAG.	H	STA	AREA	CNT	CLASS
22272	S06	W47	200	(AP)	4	P	80	1	HSX
22272	S06	W61	201	(AP)	4	H	30	1	HSX
	S07	W76				H	20	2	HRX
	S06	W78				L	50	1	HSX

HALE REGION 17649 CMP DATE 14.5

CALCIUM PLAGE DATA

YR	MO	DA	HL NO.	LAT	CMD	L	AREA	INT
81	05	12	17649	S27	E23	194	100	2.0
81	05	13	17649	S26	E09	196	100	2.0
81	05	14	17649	S26	W04	195	100	2.5
81	05	15	17649	S27	W18	194	100	2.0
81	05	16	17649	S27	W26	193	100	2.0

SUNSPOT DATA

MW NO.	LAT	CMD	L	MAG.	H	STA	AREA	CNT	CLASS
22284	S26	E24	195	B	1	H	10	1	AXX
	S30	E03				H	10	4	BXO
	S30	W09				H	10	3	AXX
	S30	W16				M		1	AXX

HALE REGION 17643 CMP DATE 16.0 RETURN OF LEADING EDGE OF 17585 ROTATION 2

CALCIUM PLAGE DATA

YR	MO	DA	HL NO.	LAT	CMD	L	AREA	INT
81	05	10	17643	N21	E68	176	400	2.0
81	05	12	17643	N22	E38	179	300	2.5
81	05	13	17643	N24	E28	177	600	2.5
81	05	14	17643	N24	E15	176	700	3.0
81	05	15	17643	N23	E01	175	600	3.0
81	05	16	17643	N23	W08	175	900	3.0
81	05	17	17643	N24	W24	175	600	3.0
81	05	19	17643	N25	W45	173	600	3.0

SUNSPOT DATA

MW NO.	LAT	CMD	L	MAG.	H	STA	AREA	CNT	CLASS
22287	N14	E11	195	(AF)	3	H	10	1	AXX
22291	N25	E20	173	X	1				

HALE REGION 17652 CMP DATE 16.9

CALCIUM PLAGE DATA

YR	MO	DA	HL NO.	LAT	CMD	L	AREA	INT
81	05	14	17652	S26	E29	162	100	3.0
81	05	15	17652	S27	E15	161	400	3.0
81	05	16	17652	S27	E05	162	500	3.5
81	05	17	17652	S25	W11	162	300	3.0
81	05	18	17652					
81	05	19	17652	S25	W36	164	400	3.5
81	05	20	17652					
81	05	21	17652	S27	W65	164	200	3.0
81	05	22	17652	S26	W75	160	100	2.5

SUNSPOT DATA

MW NO.	LAT	CMD	L	MAG.	H	STA	AREA	CNT	CLASS
	S28	E29				P	10	1	AXX
	S27	E19				H	40	12	CRO
22293	S27	E04	162	(B)	4	H	80	10	CSO
22293	S26	W10	163	(B)	4	P	90	12	DSO
22293	S26	W23	163	(BY)	4	H	60	9	CAO
	S28	W37				H	80	10	CAI
	S28	W52				H	60	5	CAI
22293	S27	W65	165	(AP)	4	H	130	3	CAO
	S27	W78				H	40	1	HSX

HALE REGION 17647 CMP DATE 17.4

CALCIUM PLAGE DATA

YR	MO	DA	HL NO.	LAT	CMD	L	AREA	INT
81	05	12	17647	N06	E60	157	200	2.5
81	05	13	17647	N06	E48	157	100	2.5
81	05	14	17647	N05	E35	156	100	3.0
81	05	15	17647	N04	E18	158	100	3.0
81	05	16	17647	N04	E11	156	100	3.0

SUNSPOT DATA

MW NO.	LAT	CMD	L	MAG.	H	STA	AREA	CNT	CLASS
22285	N07	E61	158	(B)	3	H	10	2	BXO
	N07	E45				H	20	3	AXX
	N07	E31				H	10	1	AXX

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HALE REGION 17644 CMP DATE 17.5 RETURN OF 17590, 17594 AND 17598 ROTATION 2

			CALCIUM PLAGE DATA						SUNSPOT DATA								
YR	MO	DA	HL NO.	LAT	CMD	L	AREA	INT	MW NO.	LAT	CMD	L	MAG.	H	STA	AREA	CNT	CLASS
81	05	10	17644	N11	E80	164	500	2.0	22278	N12	E85	161	AP	2	B	30	1	HSX
81	05	11	17644						22278	N12	E75	158	(D)	4	H	670	16	FKI
81	05	12	17644	N13	E65	152	4300	3.5	22278	N13	E65	154	(D)	5	H	1980	29	FKC
81	05	13	17644	N13	E54	151	5600	3.5	22278	N13	E52	154	(D)	5	H	1510	48	FKC
81	05	14	17644	N13	E37	154	7600	4.0	22278	N13	E40	153	(D)	5	H	790	35	EKI
81	05	15	17644	N12	E24	152	9500	4.0		N12	E21				H	830	46	EKI
81	05	16	17644	N13	E15	152	9400	4.0	22278	N13	E13	153	(D)	5	H	670	50	EKI
81	05	17	17644	N13	W03	154	9300	4.0	22278	N14	W00	153	(D)	5	P	540	59	EHI
81	05	18	17644						22278	N14	W13	153	(D)	5	H	600	37	ESI
81	05	19	17644	N14	W24	152	9500	4.0		N15	W23				H	440	40	FKI
81	05	20	17644							N15	W37				H	210	13	EAI
81	05	21	17644	N14	W54	153	6700	3.5	22278	N14	W53	153	(BY)	4	H	240	7	ESO
81	05	22	17644	N16	E62	23	2500	3.5		N14	E71				B	40	2	CSO
81	05	23	17644	N16	W68	141	1400	4.0	22278	N14	W72	146	(B)	4	H	170	3	DSO
81	05	24	17644	N17	W78	138	600	2.5	22278	N14	W89	150	AP	2	H	280	2	DSO

HALE REGION 17646 CMP DATE 17.5 RETURN OF REGION 17589 ROTATION 2

			CALCIUM PLAGE DATA						SUNSPOT DATA								
YR	MO	DA	HL NO.	LAT	CMD	L	AREA	INT	MW NO.	LAT	CMD	L	MAG.	H	STA	AREA	CNT	CLASS
81	05	12	17646	N18	E59	158	500	2.0										
81	05	13	17646	N18	E50	155	1200	3.0										
81	05	14	17646	N19	E38	153	800	3.5										
81	05	15	17646	N19	E23	153	1300	3.5										
81	05	16	17646	N19	E13	154	1200	3.5										
81	05	17	17646	N22	W03	154	700	3.0										
81	05	19	17646	N22	W25	153	800	3.5										
81	05	20	17646							N27	W39				L	130	20	CSO
81	05	21	17646	N23	W55	154	400	3.0										
81	05	22	17646	N22	W67	152	300	3.0		N17	W65				B	210	7	ESO

HALE REGION 17650 CMP DATE 18.0 RETURN OF REGION 17591 ROTATION 2

			CALCIUM PLAGE DATA						SUNSPOT DATA								
YR	MO	DA	HL NO.	LAT	CMD	L	AREA	INT	MW NO.	LAT	CMD	L	MAG.	H	STA	AREA	CNT	CLASS
81	05	12	17650	S12	E69	148	300	3.0										
81	05	13	17650	S10	E58	147	400	2.5										
81	05	14	17650	S12	E43	148	300	3.0										
81	05	15	17650	S12	E28	148	400	3.0										
81	05	16	17650	S12	E18	149	500	3.0										
81	05	17	17650	S11	E03	148	200	1.5										
81	05	19	17650	S10	W22	150	200	2.0										
81	05	20	17650							S09	W36				P	10	1	AXX
81	05	21	17650	S11	W51	150	200	2.5		S11	W53				B	20	1	HSX
81	05	22	17650	S09	W63	148	300	2.0										
81	05	23	17650	S08	W73	146	100	2.0										

HALE REGION 17666 CMP DATE 19.0

			CALCIUM PLAGE DATA						SUNSPOT DATA								
YR	MO	DA	HL NO.	LAT	CMD	L	AREA	INT	MW NO.	LAT	CMD	L	MAG.	H	STA	AREA	CNT	CLASS
81	05	23	17666	S20	W62	135	200	3.5	22303	S23	W65	139	X	1				
81	05	24	17666	S20	W73	133	600	4.0	22303	S22	W80	141	X	2	H	30	4	ESI

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HALE REGION 17651 CMP DATE 19.1 RETURN OF REGION 17589 ROTATION 2

CALCIUM PLAGE DATA

YR	MO	DA	HL NO.	LAT	CMD	L	AREA	INT
81	05	13	17651	N27	E68	137	400	3.0
81	05	14	17651	N27	E53	138	600	3.0
81	05	15	17651	N27	E40	136	1200	3.0
81	05	16	17651	N26	E32	135	800	3.0
81	05	17	17651	N27	E15	136	500	3.0
81	05	18	17651					
81	05	19	17651	N30	W06	134	700	3.0
81	05	21	17651	N28	W37	136	700	2.5
81	05	22	17651	N29	W47	132	500	2.5
81	05	23	17651	N31	W59	132	500	2.5
81	05	24	17651	N31	W68	128	300	1.5

SUNSPOT DATA

MW NO.	LAT	CMD	L	MAG.	H	STA	AREA	CNT	CLASS
22292	N22	E45	148	X	1				
22294	N30	W01	141	(AP)	2				
	N25	W03				L		2	AXX

HALE REGION 17653 CMP DATE 20.5

CALCIUM PLAGE DATA

YR	MO	DA	HL NO.	LAT	CMD	L	AREA	INT
81	05	13	17653					
81	05	14	17653	S25	E74	117	500	3.5
81	05	15	17653	S26	E60	116	1200	4.0
81	05	16	17653	S26	E50	117	1800	4.0
81	05	17	17653	S25	E34	117	1200	4.0
81	05	18	17653					
81	05	19	17653	S26	E12	116	2400	4.0
81	05	20	17653					
81	05	21	17653	S26	W16	115	1800	4.0
81	05	22	17653	S26	W27	112	1700	4.0
81	05	23	17653	S26	W40	113	1000	4.0
81	05	24	17653	S26	W51	111	900	3.5
81	05	25	17653					
81	05	26	17653					

SUNSPOT DATA

MW NO.	LAT	CMD	L	MAG.	H	STA	AREA	CNT	CLASS
22289	S26	E87	119	AP	2	H	290	1	HSX
22289	S25	E72	121	(AP)	4	H	400	2	HHX
	S25	E60				H	540	2	HHX
22289	S26	E48	118	(BP)	5	H	570	6	EKO
22289	S25	E34	119	(D)	5	P	480	10	CHO
22289	S25	E22	118	(BP)	5	H	540	10	CKO
	S26	E08				H	530	23	CKI
	S25	W05				H	430	15	CKI
22289	S25	W18	118	(BP)	5	H	660	24	EKI
	S25	W27				H	520	13	DKO
22289	S25	W45	119	(AP)	4	H	420	9	CKO
22289	S25	W57	118	(AP)	4	H	390	4	CKI
22289	S30	W70	117	(AP)	4				
	S23	W80				B	220	1	HHX

HALE REGION 17655 CMP DATE 21.9

CALCIUM PLAGE DATA

YR	MO	DA	HL NO.	LAT	CMD	L	AREA	INT
81	05	21	17655	N14	E02	97	200	3.0
81	05	22	17655	N14	W13	98	200	3.0
81	05	23	17655	N14	W26	99	100	2.0
81	05	24	17655	N14	W37	97	100	2.0

SUNSPOT DATA

MW NO.	LAT	CMD	L	MAG.	H	STA	AREA	CNT	CLASS
22296	N12	E02	98	(AP)	3	H	10	4	BXO
	N13	W12				H	10	1	AXX
	N12	W16				M	10	1	AXX

HALE REGION 17661 CMP DATE 23.1

CALCIUM PLAGE DATA

YR	MO	DA	HL NO.	LAT	CMD	L	AREA	INT
81	05	22	17661	N29	E04	81	100	2.5
81	05	23	17661	N30	W07	80	100	2.5

SUNSPOT DATA

MW NO.	LAT	CMD	L	MAG.	H	STA	AREA	CNT	CLASS
	N30	E05				H	10	2	BXO

HALE REGION 17654 CMP DATE 24.8

CALCIUM PLAGE DATA

YR	MO	DA	HL NO.	LAT	CMD	L	AREA	INT
81	05	18	17654					
81	05	19	17654	N33	E68	60	400	3.0
81	05	21	17654	N36	E36	63	500	3.0
81	05	22	17654	N36	E25	60	500	3.0
81	05	23	17654	N36	E14	59	400	3.0
81	05	24	17654	N36	E02	58	300	3.0
81	05	27	17654	N35	W35	54	400	3.0
81	05	28	17654	N35	W49	56	300	3.0

SUNSPOT DATA

MW NO.	LAT	CMD	L	MAG.	H	STA	AREA	CNT	CLASS
22295	N34	E78	62	(AP)	1				
	N35	E70				L	10	1	AXX

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HALE REGION 17654 (CONT) CMP DATE 24.8

				CALCIUM PLAGE DATA					SUNSPOT DATA								
YR	MO	DA	HL NO.	LAT CMD	L	AREA	INT	MW NO.	LAT CMD	L	MAG.	H	STA	AREA	CNT	CLASS
81	05	29	17654	N35 W61	55	300	2.5									
81	05	30	17654	N35 W68	49	100	2.0									

HALE REGION 17656 CMP DATE 25.4

				CALCIUM PLAGE DATA					SUNSPOT DATA								
YR	MO	DA	HL NO.	LAT CMD	L	AREA	INT	MW NO.	LAT CMD	L	MAG.	H	STA	AREA	CNT	CLASS
81	05	21	17656	N20 E50	49	200	3.0		N17 E46				H	10	1	AXX
81	05	22	17656	N17 E36	49	400	3.5		N17 E37				H	90	15	CAI
81	05	23	17656	N17 E23	50	500	3.5	22304	N18 E23	51	(B)	4	H	60	11	CSI
81	05	24	17656	N17 E11	49	700	3.5	22304	N17 E10	51	(B)	4	H	170	16	DSO
81	05	25	17656					22304	N17 W05	52	(B)	4	B	110	22	DSI
81	05	26	17656						N18 W15				H	230	37	EKI
81	05	27	17656	N17 W31	50	1500	3.5	22304	N18 W28	49	(B)	4	B	350	19	DKI
81	05	28	17656	N17 W42	49	1100	3.5	22304	N19 W40	48	(B)	4	B	140	16	DAI
81	05	29	17656	N17 W56	50	1100	3.5	22304	N20 W54	48	(BF)	4	H	50	8	DAO
81	05	30	17656	N17 W65	46	1100	3.5	22304	N20 W69	50	(B)	3	H	40	4	DSO
81	05	31	17656	N18 W79	46	300	3.5	22304	N19 W79	48	(AF)	3	H	40	3	CRO

HALE REGION 17659 CMP DATE 25.8

				CALCIUM PLAGE DATA					SUNSPOT DATA								
YR	MO	DA	HL NO.	LAT CMD	L	AREA	INT	MW NO.	LAT CMD	L	MAG.	H	STA	AREA	CNT	CLASS
81	05	20	17659						S08 E78				H	20	1	HRX
81	05	21	17659	S08 E56	43	200	3.0	22298	S13 E57	43	(B)	3	H	40	3	CRO
81	05	22	17659	S12 E42	43	200	2.5		S10 E46				H	30	2	CRO
81	05	23	17659	S12 E29	44	100	3.0	22298	S15 E35	39	(AP)	3	H		2	BXO
81	05	24	17659	S13 E16	44	100	2.0		S08 E23				H		1	AXX
81	05	25	17659					22307	S11 E03	44	(B)	3	B	30	7	CSO
81	05	26	17659						S12 W13				H	10	5	AXX
81	05	27	17659	S13 W25	44	100	3.0	22307	S12 W27	48	(AP)	2	B	10	1	AXX

HALE REGION 17673 CMP DATE 25.8

				CALCIUM PLAGE DATA					SUNSPOT DATA								
YR	MO	DA	HL NO.	LAT CMD	L	AREA	INT	MW NO.	LAT CMD	L	MAG.	H	STA	AREA	CNT	CLASS
81	05	29	17673	S13 W52	46	200	3.5	22310	S11 W51	45	(B)	3	H	10	2	AXX
81	05	30	17673	S13 W63	44	200	3.5	22310	S11 W66	47	(B)	3	H	30	4	DSO
81	05	31	17673	S13 W75	42	100	2.5	22310	S14 W75	44	(AF)	2	N	70	4	CRO

HALE REGION 17658 CMP DATE 26.4 RETURN OF FRONT HALF OF 17609 ROTATION 2

				CALCIUM PLAGE DATA					SUNSPOT DATA								
YR	MO	DA	HL NO.	LAT CMD	L	AREA	INT	MW NO.	LAT CMD	L	MAG.	H	STA	AREA	CNT	CLASS
81	05	21	17658	N06 E65	34	1200	3.0									
81	05	22	17658	N06 E47	38	2600	3.0									
81	05	23	17658	N05 E32	41	2300	3.5									
81	05	24	17658	N04 E20	40	1900	3.0		N03 E22				B	10	1	AXX
81	05	26	17658						N03 W04				H	20	10	BXO
81	05	27	17658	N04 W18	37	1400	3.0									
81	05	28	17658	N04 W39	46	1000	3.5									
81	05	29	17658	N04 W45	39	1300	3.0									
81	05	30	17658	N05 W56	37	800	3.0									
81	05	31	17658	N05 W71	38	300	3.0		N03 W63				M	160	3	DSO

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HALE REGION 17657 CMP DATE 26.6 RETURN OF REGION 17608 ROTATION 2

				CALCIUM PLAGE DATA					SUNSPOT DATA								
YR	MO	DA	HL NO.	LAT CMD	L	AREA	INT	CLASS	MW NO.	LAT CMD	L	MAG.	H	STA	AREA	CNT	CLASS
81	05	21	17657	N18 E65	34	200	2.5	AXX	22299	N15 E65	35	(AP)	2				
81	05	22	17657	N17 E49	36	200	3.0	CAI		N16 E50				H	10	1	AXX
81	05	23	17657	N16 E37	36	100	2.5	CSI		N16 E33				M	70	13	DAO
81	05	24	17657	N16 E25	35	200	2.5	DSO		N17 E18				M	120	12	DAO
81	05	26	17657					DSI		N18 W02				H	10	3	BXO
81	05	27	17657	N16 W15	34	300	3.0	EKI		N18 W21				L	260	27	EAI
81	05	28	17657	N17 W27	34	200	3.0	DKI		N18 W33				M	260	18	DAI
81	05	29	17657	N17 W42	36	200	3.0	DAI		N18 W46				M	220	12	DAI
81	05	30	17657	N17 W53	34	100	2.5	DAO		N17 W61				P	170	9	EAO

HALE REGION 17660 CMP DATE 26.8

				CALCIUM PLAGE DATA					SUNSPOT DATA								
YR	MO	DA	HL NO.	LAT CMD	L	AREA	INT	CLASS	MW NO.	LAT CMD	L	MAG.	H	STA	AREA	CNT	CLASS
81	05	20	17660					HRX		S08 E78				H	20	1	HRX
81	05	21	17660	S07 E68	31	500	3.0	CRO	22301	S08 E65	35	(AP)	3	H	40	3	CRO
81	05	22	17660	S07 E56	29	700	3.0	CRO		S10 E46				H	30	2	CRO
81	05	23	17660	S11 E41	32	800	3.0	BXO	22301	S08 E37	37	(AP)	4	H		2	BXO
81	05	24	17660	S12 E28	32	800	3.0	AXX	22301	S03 E24	37	(AP)	3	H		1	AXX
81	05	26	17660					AXX		S08 E05				H	10	3	AXX
81	05	27	17660	S12 W13	32	700	3.0	CSO	22308	S13 W06	27	(AP)	2	P	10	1	AXX
81	05	28	17660	S12 W24	31	600	3.0	AXX	22308	S11 W19	27	(B)	3	B	30	2	CSO
81	05	29	17660	S12 W38	32	600	3.0	AXX									
81	05	30	17660	S12 W50	31	600	3.0	AXX		S13 W57				L	60	1	HSX
81	05	31	17660	S09 W64	31	200	2.0	AXX		S05 W60				P	210	6	DAO

HALE REGION 17663 CMP DATE 27.4 RETURN OF REAR PORTION OF 17609 ROTATION 2

				CALCIUM PLAGE DATA					SUNSPOT DATA								
YR	MO	DA	HL NO.	LAT CMD	L	AREA	INT	CLASS	MW NO.	LAT CMD	L	MAG.	H	STA	AREA	CNT	CLASS
81	05	21	17663					HRX	22300	N03 E80	20	(AP)	3	H	100	4	DAO
81	05	22	17663	N02 E67	18	400	3.0	CRO		N03 E67				H	180	5	DAO
81	05	23	17663	N02 E55	18	500	3.5	CRO	22300	N03 E53	21	(BY)	4	H	170	8	DAO
81	05	24	17663	N02 E42	18	1100	3.0	BXO	22300	N02 E41	20	(BY)	4	H	220	13	DSO
81	05	25	17663					AXX	22300	N03 E25	22	(BY)	5	B	260	30	EKI
81	05	26	17663					CSO		N04 E10				H	370	48	EKI
81	05	27	17663	N03 W04	23	1700	3.0	AXX	22300	N03 W03	24	(B)	4	B	240	17	DAI
81	05	28	17663	N03 W16	23	1800	3.5	AXX	22300	N04 W16	24	(BY)	4	B	400	22	DSI
81	05	29	17663	N03 W32	26	2200	3.5	AXX	22300	N05 W32	26	(B)	4	H	340	15	DAO
81	05	30	17663	N03 W44	25	2000	3.5	AXX	22300	N05 W45	26	(BY)	4	H	250	14	DAO
81	05	31	17663	N04 W57	24	1200	3.5	DSO	22300	N03 W57	26	(BY)	4	H	300	10	DAO
81	05	31	17663	N04 W57	24	1200	3.5	CRO	22312	S01 W43	12	(AF)	2	M	400	15	DAI
81	06	1	17663	N05 W70	23	1300	3.0		22300	N03 W70	26	(AP)	3	H	180	5	DSO
81	06	2	17663						22300	N02 W83	25	AP	2	H	50	1	HHX

HALE REGION 17665 CMP DATE 27.8 RETURN OF NE TIP OF 17609 ROTATION 2

				CALCIUM PLAGE DATA					SUNSPOT DATA								
YR	MO	DA	HL NO.	LAT CMD	L	AREA	INT	CLASS	MW NO.	LAT CMD	L	MAG.	H	STA	AREA	CNT	CLASS
81	05	23	17665	N06 E55	18	200	3.5	AXX		N03 E54				H	170	8	DAO
81	05	24	17665	N07 E41	19	100	3.0	BXO		N03 E42				H	220	13	DSO

REGIONS OF SOLAR ACTIVITY

MAY 1981

HALE REGION 17662 CMP DATE 28.1

				CALCIUM PLAGE DATA					SUNSPOT DATA								
YR	MO	DA	HL NO.	LAT	CMD	L	AREA	INT	MW NO.	LAT	CMD	L	MAG.	H	STA	AREA	CNT	CLASS
81	05	21	17662						22302	N12	E89	11	AP	1				
81	05	22	17662	N14	E69	16	400	3.0		N14	E74				H	120	4	CAO
81	05	23	17662	N14	E68	5	400	3.5	22302	N13	E60	14	(B)	3	H	50	5	BXO
81	05	24	17662	N14	E45	15	600	3.0	22302	N13	E46	15	(B)	4	H	10	5	BXO
81	05	25	17662						22302	N15	E30	17	(AP)	3	B		1	AXX
81	05	26	17662							N14	E19				H	10	4	BXO
81	05	27	17662	N14	E05	14	200	2.5	22302	N15	E06	15	(B)	3	B	10	2	BXO
81	05	28	17662	N14	W07	14	200	3.0	22302	N15	W07	15	(AP)	3	B	10	3	BXO
81	05	29	17662	N14	W21	15	200	3.0		N13	W20				B	10	1	AXX
81	05	30	17662	N14	W33	14	200	3.0		N15	W28				L		1	AXX
81	05	31	17662	N14	W46	13	200	3.0										
81	06	1	17662	N14	W59	12	100	2.5										

HALE REGION 17664 CMP DATE 28.4

				CALCIUM PLAGE DATA					SUNSPOT DATA								
YR	MO	DA	HL NO.	LAT	CMD	L	AREA	INT	MW NO.	LAT	CMD	L	MAG.	H	STA	AREA	CNT	CLASS
81	05	22	17664	S23	E75	10	100	2.0										
81	05	23	17664	S24	E62	11	200	2.0										
81	05	24	17664	S24	E52	8	200	2.0										
81	05	27	17664	S23	E08	11	200	2.5										
81	05	28	17664	S22	W03	10	200	3.0										
81	05	29	17664	S22	W17	11	200	3.0										
81	05	30	17664	S22	W28	9	200	3.0										
81	05	31	17664	S22	W44	11	200	3.0										
81	06	1	17664	S22	W55	8	100	2.0										

HALE REGION 17667 CMP DATE 30.9 NEW, IN LOCATION OF REGION 17621

				CALCIUM PLAGE DATA					SUNSPOT DATA								
YR	MO	DA	HL NO.	LAT	CMD	L	AREA	INT	MW NO.	LAT	CMD	L	MAG.	H	STA	AREA	CNT	CLASS
81	05	24	17667	S07	E80	340	200	2.5	22306	S06	E79	342	(AP)	4	H	190	1	HSX
81	05	25	17667						22306	S03	E65	342	(AP)	4	B	170	2	CHO
81	05	26	17667							S06	E55				H	190	9	CHI
81	05	27	17667	S06	E42	337	1500	3.5	22306	S04	E40	341	(BP)	4	R	310	10	DHI
81	05	28	17667	S06	E29	338	1900	3.5	22306	S08	E26	342	(B)	4	B	280	7	DHI
81	05	29	17667	S06	E16	338	1400	3.5	22306	S07	E12	342	(BP)	5	H	280	9	DKO
81	05	30	17667	S06	E03	338	1500	3.5	22306	S07	W02	343	(BP)	4	R	260	15	DAO
81	05	31	17667	S06	W14	341	1800	3.5	22306	S06	W12	341	(BP)	5	H	180	18	CHO
81	06	1	17667	S06	W26	339	2000	3.0	22306	S06	W27	343	(BY)	5	H	210	7	CKO
81	06	2	17667						22306	S07	W42	344	(BP)	4	H	200	4	CHO
81	06	3	17667	S06	W52	339	2000	3.0	22306	S07	W52	339	(AP)	4				
81	06	4	17667	S06	W66	340	900	3.5	22306	S07	W69	345	(AP)	3	H	190	3	HSX
81	06	5	17667	S06	W71	331	400	3.0		S07	W81				B	100	2	CSO
81	06	6	17667	S07	W77	326	200	3.5		S09	W73				H	20	3	BXO

HALE REGION 17668 CMP DATE 31.3 RETURN OF REAR HALF OF 17619 ROTATION 3

				CALCIUM PLAGE DATA					SUNSPOT DATA								
YR	MO	DA	HL NO.	LAT	CMD	L	AREA	INT	MW NO.	LAT	CMD	L	MAG.	H	STA	AREA	CNT	CLASS
81	05	26	17668							N20	E57				H	10	3	AXX
81	05	27	17668	N18	E48	331	200	2.5										
81	05	28	17668	N18	E36	331	200	3.0										
81	05	29	17668	N18	E21	333	200	3.0										
81	05	30	17668	N18	E12	329	400	3.0		N20	E12				R	10	1	AXX
81	05	31	17668	N20	W05	332	400	3.0		N15	W04				H	10	3	BXO
81	06	1	17668	N20	W15	328	300	3.0		N15	W10				H	10	2	AXX
81	06	3	17668	N21	W43	330	300	2.0										
81	06	4	17668	N22	W55	329	100	2.5										
81	06	5	17668	N22	W69	329	100	2.0										

REGIONS OF SOLAR ACTIVITY

MAY 1981

HALE REGION 17670 CMP DATE 31.4 RETURN OF NE PORTION OF 17623 ROTATION 3

			CALCIUM PLAGE DATA						SUNSPOT DATA								
YR	MO	DA	HL NO.	LAT	CMD	L	AREA	INT	MW NO.	LAT	CMD	L	MAG.	H	STA	AREA	CNT	CLASS
81	05	27	17670	N08	E51	328	700	3.0										CAO
81	05	28	17670	N08	E36	331	1000	3.0										BXO
81	05	29	17670	N08	E22	332	800	3.0		N07	E22				B	20	5	BXO
81	05	30	17670	N08	E10	331	800	3.0										AXX
81	05	31	17670	N08	W04	331	800	3.0	22313	N10	W05	334	(AP)	3	M	10	3	BXO
81	06	1	17670	N08	W17	330	900	3.0	22313	N10	W15	331	(AP)	3	H	10	2	BXO
81	06	3	17670	N11	W46	333	400	3.0										BXO
81	06	4	17670	N13	W61	335	300	2.5										AXX
81	06	5	17670	N12	W70	330	200	2.0										AXX

HALE REGION 17669 CMP DATE 31.9

			CALCIUM PLAGE DATA						SUNSPOT DATA								
YR	MO	DA	HL NO.	LAT	CMD	L	AREA	INT	MW NO.	LAT	CMD	L	MAG.	H	STA	AREA	CNT	CLASS
81	05	26	17669							N16	E79				M	130	1	HSX
81	05	27	17669	N15	E57	322	200	2.0										CHO
81	05	28	17669	N15	E45	322	400	3.0										CHI
81	05	29	17669	N14	E29	325	500	3.0		N10	E25				P	10	1	DHI
81	05	30	17669	N14	E16	325	300	3.0										DHI
81	05	31	17669	N14	E03	324	300	3.0		N14	E13				P	50	5	DKO
81	06	1	17669	N15	W10	323	300	3.0		N15	W10				H	10	2	DAO
81	06	3	17669	N15	W37	324	300	3.0		N15	W30				P	140	9	CHO
81	06	4	17669	N16	W52	326	400	3.0		N14	W43				P	80	6	CKO
																		CHO

DAILY CALCIUM PLAGE INDEX

MAY 1981

YR	MO	DAY	INDEX	YR	MO	DAY	INDEX	YR	MO	DAY	INDEX
81	5	1	37.4	81	5	11	*	81	5	21	25.8
81	5	2	39.4	81	5	12	36.4	81	5	22	21.3
81	5	3	45.3	81	5	13	42.4	81	5	23	19.2
81	5	4	48.8	81	5	14	50.6	81	5	24	18.0
81	5	5	*	81	5	15	63.7	81	5	25	*
81	5	6	49.7	81	5	16	62.8	81	5	26	*
81	5	7	55.0	81	5	17	48.8	81	5	27	24.6
81	5	8	47.6	81	5	18	*	81	5	28	25.6
81	5	9	47.6	81	5	19	49.4	81	5	29	28.2
81	5	10	23.3	81	5	20	*	81	5	30	25.6
								81	5	31	26.5

* NO OBSERVATIONS

NOTE: On these dates, spectroheliograms from other observatories were used (other than Mt. Wilson):

Sacramento Peak Observatory, New Mexico: May 16 and 19, 1981
Institute for Astronomy, Hawaii: May 15, 1981

No spectroheliograms from any source were available for May 5, 11, 18, 20, 25, and 26, 1981.
No sunspot observations were made at Mt. Wilson Observatory on May 4, 15, 19, 20, 22, and 26, 1981.

Contiguous plages for May 1981: None.

SUDDEN IONOSPHERIC DISTURBANCES

MAY 1981

DAY	UNIVERSAL TIME START	END	MAX	IMP	WIDE SPREAD INDEX	NUMBER OF STATION REPORTS BY TYPE SWF	SCNA	SEA	SPA	LF-SPA	SES	SFD	KNOWN FLARE	HALE REGION
01	2137	2226	2143	1-	3				1		4		2137E	17609
02	0346	0424	0350	1-	1				1				0346	17609
02	0913	0940	0915	1-	1			1					0915E	17608
02	1733	1815	1744	1-	5				1		15		1729	17627
02	1946	2015	1953	1-	3						2		1940	17624
03	1547	1615	1552	1	3						2		1549	17625
03	2037	2108	2045	1-	3				1		1		2038	17624
04	0838	1034	0846	3	5	4		6	1	1	4		0839E	17628
04	1450	1505	1453	1-	3					1	3		1446	17620
04	1623	1653	1630	1-	3				1		3		NF	
04	2107	2141	2111	1-	1				1				2101	17620
05	0110	0218	0134	1-	3	1			1				0111	17620
05	0243	0302	0249	1-	1				1				0244	17620
05	0513	0549	0534	1-	3			1	1				0508	17620
05	0643	0719	0649	1-	1				1				0643	No data
05	0708	0730	0711	1-	1			1					0705	No data
05	0931	0950	0938	1-	3	1			1	1	1		*	
05	1137	1208	1145	1	3			3					*	
05	1407	1510	1415	3	5	5							1407E	No data
05	2150	2226	2157	1-	3				1		5		2151	No data
05	2254	0149	2308	2+	5	4			2		12		2254	No data
06	1848	1935	1855	1-	5				1		12		1848	17624
07	0926	1100	0938	1-	3			2		1			0922	17620
07	1427	1445	1432	1-	5	1			1	1	6		1430	17638
07	1509	1623	1519	1-	5				1	1	9		1504	17638
07	1743	1830	1753	1-	3				1		14		1739E	17624
07	2103	2130	2108	1-	3						3		2102	17620
08	0006	0055	0009	1-	1				1				0005	17638
08	1501	1530	1505	1	5	1		1			15		1500	17620
08	1616	1630	1620	1-	5			3		1	8		1616	17638
08	1700	1738	1705	1-	3				1		11		1704	17621
08	1930	1950	1936	1-	3						6		1930	17624
08	2100	2110	2102	1-	3						2		2057	17621
08	2205	0237	2247	2+	5	1			1		9		2206	17638
08	2246	0006	2313	1	1	1							2250E	17638
09	0247E	0422	0257	2+	5	2		1	2		5		0247	17624
09	0638	0740	0650	1-	3				1		1		0635	17620
09	0928	1015	0943	2	5	2		4	1	1	1		*	
09	1222	1300	1235	1	5	1		3	1	1	3		NF	
09	1636	1710	1644	1+	5	1		1	1	1	15		*	
09	1719	1826	1728	1-	5	1			1		15		*	
09	2144	2206D	2150	1-	3				1		4		2142	17638
09	2206E	2256D	2215	1	5	4			1		13		2204	17638
09	2256E	0024	2310	1+	5	4			2		9		2256	17638
10	0129	0246	0141	1-	5	1			2		7		NF	
10	0500	0643	0511	2+	5	2		1	1	1	5		0459	17638
10	0717	0844	0742	1	5	3		3	1	1	4		0715	17624
10	1130	1136D	1136	1-	3	1			1	1			*	
10	1203	1450	1255	3+	5	3		3	1	1	5		*	
10	1930	1955	1938	1-	5				2		12		1930	17638
10	2001	2040	2008	1-	3				1		11		2001	17638
10	2231	2309	2241	1-	3				1		4		2233	17638
10	2320	2354	2331	1-	3				1		3		2315	17638
11	0120	0217	0138	1-	1				1				0122	17638
11	0140	0156	0146	1-	1				1				0144	17638
11	0238	03000	0245	1-	1				1				0237	17638
11	0300E	0323	0308	1-	1				1				0256	17638
11	0508	0546D	0526	1	3			2	1				0502	No data
11	0546E	0707	0552	2+	5	4		4	1	1			0546E	No data
11	0709	0735	0713	1-	3			1		1			0711	No data
11	0750	0810	0756	1-	1					1			0751	No data
11	1405	1415D	1415	1-	3				1		5		1404	No data
11	1533	1550	1540	1-	5	1			1		12		NF	
11	1600	1800	1618	1	5	2		1	1	1	11		1557	No data
11	2012	2046	2019	1-	5				1		9		2010	No data
11	2254	2318	2303	1-	1				1				2252	No data

SUDDEN IONOSPHERIC DISTURBANCES

MAY 1981

DAY	UNIVERSAL TIME START	END	MAX	IMP	WIDE SPREAD INDEX	NUMBER OF STATION REPORTS BY TYPE SWF	SCNA	SEA	SPA	LF-SPA	SES	SFD	KNOWN FLARE	HALE REGION
12	0135E	0224	0142	1-	3	1			1	3			0136E	17644
12	0346	0443	0352	1-	3	1			1				0353E	17639
12	2018	2039	2022	1-	3	1			1	1			2016	17639
13	0336	1050	0422	3+	5	3		1	2		1		0346	17650
13	1445	1455	1446	1-	3						2		1445	17638
13	1758	1947	1818	1	5	1			1		14		1752	17644
13	2323	0030	2331	1-	3	1			1		2		2324	17638
14	0315	0430	0322	2	5	2			2		5		0315	17638
14	0809	0839D	0817	1-	1				1				0808	17646
14	0835	0940	0855	2	5	4		2		1	2		0830E	17646
14	1344	1358D	1358	1-	1				1				1348	17644
14	1422	1553	1437	1	5	2		1	1	1	13		1420	17644
14	1934	2042	1938	1-	5				2		14		1931	17644
14	2123	2225	2133	1-	5	1			1		11		2123	17638
15	0229E	0320	0235	1-	3				2				0229	17638
15	0522	0548	0529	1-	1				1				0521	17640
15	0737	0938	0804	1	3				1	1	4		0739	17644
15	1312	1533	1345	1-	1				1				1311E	17640
15	1831	1851	1833	1-	3				1		13		1830	17644
15	1856	1924	1900	1-	3	1			1		8		*	
15	2217	2308	2228	1-	3				1		1		2220E	17644
16	0021	0136	0027	1	5	2			2		2		0022	17644
16	0039	0100	0045	1-	1						1		0038	17640
16	0210	0320	0217	1	3	2			2		1		0210	17653
16	0754	0812D	0801	1-	3			2	1	1	1		0752	17644
16	0812E	1235	0854	3+	5	4		1	1	1	2		0812	17644
16	1627	1645	1631	1-	3						3		1629E	17644
17	1944	2027	1956	1-	5	1			2		11		1944	17644
17	2128	2226	2140	1-	5	1			1		9		2123	17644
18	0015	0050	0017	1	1						1		0018	17653
18	1410	1435	1423	1-	3				1		3		1410	17653
18	1827	1850	1832	1-	3						2		1826	17644
18	1943	2044	1949	1-	5	1			2		1		1942	17643
18	2152	2215	2200	1-	1						1		2153	17644
19	0818	0854	0825	1-	1				1				0816	17644
19	1224	1318	1242	1-	1						1		*	
20	0249	0437	0315	2	3	2			2		2		0253	17644
20	0302	0345	0313	1	3			1			4		0300	17644
20	0503	0543	0512	1-	1				1				0508	17644
20	2147	2210	2154	1-	3						2		2147	No data
22	0621	0804	0633	1+	5	3		1	2	1	4		0621	17644
23	0319	0442	0336	1	3				2		1		0322	17662
23	0736	0754	0742	1-	1				1				0737	17656
23	1336	1415	1347	1-	3			1	1				1338	17656
23	1755	1908	1813	1-	5	1			1		12		1755	17653
24	0323	0514	0338	1	1				1				0320	17663
24	0431	0617	0447	2	3				1		2		NF	
24	1414	1550	1433	1-	5	1		1	1		5		1413	17663
24	1723	1748	1726	1	1				1				1720	17666
25	0308	0408	0327	1-	1				1				0307	17658
25	0722	0846	0740	1	3	2			1	1			0723	17658
25	1257	1500	1300	1	1			1					1253	17658
25	2027	2038	2028	1	1	1							2021	17657
26	0412	0454	0424	1-	3				2				NF	
26	2056	2113	2104	1-	1				1				2050	No data
27	0758	0827	0808	1-	1				1				0758	17657
27	1338	1408	1345	2	1				1				*	
29	0202	0251	0222	1-	1	1							0157	17667
29	0307	0412	0319	1-	3				2				0308	17657
30	2028	2058	2033	1-	1				1				*	

SUDDEN IONOSPHERIC DISTURBANCES

MAY 1981

STATIONS REPORTING FOR MAY 1981:

Darmstadt, GFR (DA)	SWF	Maui, Hawaii, USA (MI)	SES
Durham, North Carolina, USA (A54)	SES	Mayfield Village, Ohia, USA (A28)	SES
Eugene, Oregon, USA (A57)	SES	Missoula, Montana, USA (A31)	SES, SWF
Eureka, Montana, USA (A55)	SES	Panska Ves, Czechoslovakia (PU)	SES, SWF
Frenchtown, Montana, USA (A56)	SES	Paterson, New Jersey, USA (A46)	SES
Glenorchy, Tasmania, Australia (GN)	SWF	Portage, Michigan, USA (A51)	SES
Hiraiso, Japan (HI)	SPA	Sao Paulo, Brasil (UM)	SES, SPA
Hobart, Tasmania, Australia (HO)	SEA	Sofia, Bulgaria (SF)	SEA
Houston, Texas, USA (A50)	SES	St. Cloud, Minnesota, USA (SC)	SES
Huancayo, Peru (HU)	SWF	Thornwood, New York, USA (A48)	SES
Inubo, Japan (IN)	SPA	Trenton, New Jersry, USA (NJ)	SES
Juliusruh, GDR (JH)	SWF	Tucson, Arizona, USA (A9)	SES
Kasugai, Japan (KA)	SPA	Upice, Czechoslovakia (UI)	SEA
Kuhlungsborn, GDR (KU)	SEA, SPA	Vsetin, Czechoslovakia (VS)	SEA
Lake Hiawatha, New Jersey, USA (A32)	SES	Valley Cottage, New York, USA (A1)	SES
Latrobe, Pennsylvania, USA (A19)	SES	Yakima, Washington, USA (A37)	SES
Louisville, Kentucky, USA (A26)	SES	Zilina, Czechoslovakia (ZL)	SEA

NOTE: Observations are not necessarily continuous for each reporting station.

SIDs BY HALE REGION

MAY 1981

Region	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31
17608		1																													
17609	1	1																													
17620				2	3		2	1	1																						
17621								2																							
17624		1	1			1	1	1	1	1																					
17625			1																												
17627		1																													
17628				1																											
17638							2	4	3	5	4		2	2	1																
17639												2																			
17640															2	1															
17643																		1													
17644												1	1	3	3	4	2	2	1	3		1									
17646														2																	
17650													1																		
17653																1		2					1								
17656																							2								
17657																									1				1		
17658																									3		1				
17662																							1								
17663																								2							
17666																								1							
17667																													1		
NO FLARE				1					1	1	1													1		1					
NO FLARE PATROL									3	2					1				1								1			1	
NO DATA					5						8									1						1					
EVENT TOTALS	1	4	2	4	8	1	5	8	9	9	13	3	4	7	7	6	2	5	2	4		1	4	4	4	2	2		2	1	

SOLAR RADIO EMISSION
SPECTRAL OBSERVATIONS

MAY 1981

DAY	TIMES OF OBSERVATION		STATION	EVENTS									SPECTRAL TYPE
				DECIMETRIC BAND			METRIC BAND			DEKAMETRIC BAND			
	START UT	END UT		START UT	END UT	INT	START UT	END UT	INT	START UT	END UT	INT	
01	0000	0729	CULG				0014						IIIB,W
			CULG				0047						IIIB,W
			CULG				0254						IIIB,W
	0440	1800	DWIN										
			CULG				0643.5						IIIB,W
	0910	1730	BLEN										
	0444	1216	WEIS				1034.9	1035.3	1				IIIG
			WEIS				1049.6	1049.8	1				IIIG
			WEIS				1206.6	1206.8	1				IIIB
	1300	2325	HARV	1402	1403	2							I
			HARV	1447	1448	1	1447	1448	1				IIIGW
			HARV	1603		1	1603		1				IIIGW
			HARV				1727	1728	3	1727	1728	3	IIIG
			SGMR				1727.2	1727.3	2				III
	1246	1754	WEIS				1727.2	1727.5	2				IIIG
			HARV	2104	2105	2							I
	2029	2400	CULG				2116.5	2117					IIIG,W
			CULG	2137	2139	1							DCIM
			HARV	2137	2138	2							IIIG
02	0000	0720	CULG				0233.5		1				IIIB,U
	0443	0924	WEIS				0803.6	0803.8	2				IIIB
			WEIS				0837.5	0837.7	2				IIIG
	0929	1756	WEIS				0954.9	0955.2	1				IIIG
			WEIS				1115.4	1115.8	2				IIIG
			WEIS				1412.2	1412.3	1				IIIB
			WEIS				1427.7	1427.9	2				IIIG,U
	1247	2400	HARV				1428	2026	2	1751	2027	2	IIIN
			HARV	1454	1803	1							IIIN
			WEIS				1606.9	1607.0	1				IIIB
			WEIS				1608.2	1608.7	2				IIIG
	0505	1730	BLEN	1625.4	1625.8	1							IIIG
	0440	1800	DWIN	1625.9		1							IIIG
			WEIS				1634.5	1634.9	1				IIIG
			DWIN	1729.5	1730.5	1							IIIG
			BLEN	1729.5	1729.7	1							IIIG
			WEIS				1751.4	1751.6	1				IIIB
			HARV	1756	1758	3	1756	1758	3				IIIG
			HARV				1810	1812	3				IIIG
			HARV				1823		2	1823		2	IIIG
			HARV	1939	1941	1	1937	1942	3	1937	1942	2	IIIGG
			HARV	1940	1942	1	1940	1944	1				I
	2030	2400	CULG				2042	2400					IIIN,W
			CULG				2054	2145					IS,W
			CULG				2110	2110.5	1				IIIG
			HARV				2110		2	2110		2	IIIG
			HARV	2223	2226	3							IIIG
			CULG	2224.5	2225.5	1							IIIG
			CULG				2336	2336.5	1				IIIG
			CULG				2348	2400					IS,W
03	0000	0729	CULG				0000	0216					IN,W
			CULG				0026	0026.5					IIIB,W
			CULG				0033.5	0034.5	1				IIIG
			LEAR				0214.5	0215.8	1				CONT
			CULG				0216	0255					IS,W
			CULG	0224	0224.5	1							UNCLF
			CULG				0237	0246					IIIS,W
			CULG				0243	0246	1				I
			CULG				0244.5	0245.5	1				IIIG
	0440	1800	DWIN										
			CULG				0455.5	0456.5	2				IIIG,V
	0441	1010	WEIS				0455.7	0458.2	2				IIIG
			LEAR				0455.8	0456.4	1				CONT
			CULG				0537		1				IIIB
			WEIS				0537.2	0537.4	2				IIIG
			LEAR				0537.3	0537.4	1				CONT
			WEIS				0544.5	0544.6	1				IIIB

SOLAR RADIO EMISSION
SPECTRAL OBSERVATIONS

MAY 1981

DAY	TIMES OF OBSERVATION		STATION	EVENTS										SPECTRAL TYPE
				DECIMETRIC BAND			METRIC BAND			DEKAMETRIC BAND				
	START UT	END UT		START UT	END UT	INT	START UT	END UT	INT	START UT	END UT	INT		
03			WEIS				0547.5	0547.6	1					IIIB
			CULG				0618	0619	1					IIIG
			WEIS				0618.2	0619.2	1					IIIG
			CULG				0635	0636	3					IIIG,V
			LEAR				0635.0	0635.5	1					CONT
			WEIS				0635.1	0635.7	3					IIIG,U
			CULG				0638	0640	1					IIIG
			WEIS				0638.1	0639.9	2					IIIG
			WEIS				0831.5	0833.9	3					IIIG
			LEAR				0832.6	0832.9	2					CONT
			WEIS				0837.2	0837.3	2					IIIG
			WEIS				0841.9	0842.3	2					IIIG
			LEAR				0841.9	0842.2	1					CONT
			WEIS				0956.1	0956.5	1					IIIG
			WEIS				0959.0	1001.3	1					IIIG
	1019	1604	WEIS				1136.4	1136.6	1					IIIB
			WEIS				1205.8	1206.6	2					IIIG
	0505	1730	BLEN				1206.2	1206.4	2					IIIG
			BLEN	1233.2	1233.6	2								IIIG
			WEIS				1306.7	1306.8	2					IIIB
	1247	2255	HARV				1347	2115	2					IIIN
			HARV				1351	2040	1					IN
			HARV	1453	1702	1								IIIN
			WEIS				1506.7	1507.1	1					IIIG
			WEIS				1554.8	1555.1	2					IIIG
			HARV				1555	1607	3					IIIGG
			WEIS				1558.4	1559.6	2					IIIG
			WEIS				1600.9	1601.8	2					IIIG
			HARV							1802	2002	2		IIIN
			HARV				1817	1820	3	1817	1820	3		IIIGG,V
			HARV				1906		3	1906		2		IIIG
			HARV				1932	1938	2	1932	1938	1		IIIGG
			HARV	1941	1942	3	1941	1958	3	1946	1958	2		IIIGG
			HARV				1947	1953	3				II	
			HARV	2015	2016	1	2015	2016	3					IIIG
			HARV				2024		3					IIIG
	2029	2400	CULG				2029	2400						IS,W
			CULG				2053	2133	1					IIIN
			CULG				2115	2400						IIIN,W
			HARV				2127	2128	3					IIIG
			HARV	2133		1	2132	2134	3	2134		2		IIIGG,V
			CULG	2133	2133.5	1	2133	2135.5	3					IIIG,V
04	0000	0729	CULG				0000	0729						IS,W
			CULG				0208	0209.5	1					IIIG
			LEAR				0208.0	0209.0	1					V
			CULG				0212	0727						IIIN,W
			CULG				0240.5	0242	1					IIIG
			LEAR				0241.1	0242.2	1					CONT
	0505	1730	BLEN				0519.9	0520.7	2					IIIG
			CULG				0520	0521	1					IIIG
	0508	1758	WEIS				0520.0	0520.7	2					IIIG
			CULG	0521.5	0536									IIIN,W
			WEIS				0546.2	0546.3	1					IIIB
			CULG				0559.5		1					IIIB
			WEIS				0622.6	0622.8	1					IIIB
			CULG				0636	0710						SCINT
			BLEN				0640.4	0659.6	3					IIIG,U
			CULG				0640.5	0641	2					IIIG,U
			WEIS				0640.5	0641.3	3					IIIG
			LEAR				0640.5	0640.7	1					CONT
			CULG				0654	0658	1					IIIN
			WEIS				0654.3	0654.9	3					IIIG
			LEAR				0654.4	0654.9	1					CONT
			WEIS				0656.5	0700.3	3					IIIGG
			CULG	0659	0659.5	2	0659	0700	2					IIIG,V
			LEAR				0659.1	0700.1	1					CONT
			WEIS				0659.7	0659.9	1					IIIG
			BLEN				0759.3	0759.6	2					IIIG
			LEAR				0759.3	0759.6	1					CONT

SOLAR RADIO EMISSION
SPECTRAL OBSERVATIONS

MAY 1981

DAY	TIMES OF OBSERVATION		STATION	EVENTS									SPECTRAL TYPE
				DECIMETRIC BAND			METRIC BAND			DEKAMETRIC BAND			
	START UT	END UT		START UT	END UT	INT	START UT	END UT	INT	START UT	END UT	INT	
04			WEIS				0759.4	0759.7	2				IIIG
			WEIS				0813.6	0813.8	1				IIIG
			WEIS				0815.5	0815.6	1				IIIG
			WEIS				0819.1	0820.7	2				IIIG
			WEIS				0833.1	0834.7	3				IIIGG
			BLEN				0833.2	0834.1	2				IIIG
			LEAR				0833.4	0834.7	1				CONT
			BLEN	0837.3	0840.5	1							IIIG
	0635	1800	DWIN	0839.5	0840.6	1							IV
			DWIN	0932.3	0932.7	2							IIIG
			WEIS				0943.9	0946.3	2				IIIG
			WEIS				1001.4	1005.9	1				IIIG
			WEIS				1018.2	1018.6	3				IIIG,U
			BLEN				1018.2	1036.2	2				IIIG,V
			WEIS				1020.2	1021.9	3				IIIG
			WEIS				1024.2	1024.3	2				IIIG
			WEIS				1035.7	1036.4	3				IIIG
			BLEN				1140.5	1140.6	2				IIIB,U
			WEIS				1148.1	1150.1	2				IIIG
			WEIS				1156.1	1157.3	1				IIIG
			WEIS				1218.8	1219.0	1				IIIG
			WEIS				1222.7	1223.7	1				IIIG
	1247	2315	HARV				1250	2315	2				IN
			HARV	1300		2							IIIG
			BLEN				1448.9	1449.1	1				IIIB
			HARV	1449		2	1449		2				IIIG
			HARV				1538	1539	2				IIIG
			WEIS				1538.2	1538.7	3				IIIG
			WEIS				1709.7	1710.1	1				IIIB
			HARV				1710	1936	2	1710	1918	2	IIIN
			HARV				1846	1853	2	1846	1853	2	IIIGG
			HARV				1904	1905	2	1904	1905	2	IIIGG
	2029	2400	CULG				2029	2400					IS,W
			CULG				2122	2400					IIIN,W
			CULG				2216.5	2218	1				IIIG
			HARV				2223	2224	2	2223	2224	2	IIIG
			CULG	2224	2224.5	1	2222	2224.5	3				IIIGG
05	0000	0729	CULG				0000	0425					IS,W
			CULG				0029	0037					IIIS,W
			CULG				0149		1				IIIB
			CULG				0316	0316.5					IIIG,W
			CULG				0333	0410					IIIS,W
			CULG				0335		1				IIIB
			LEAR				0335.1	0335.3	1				V
	0450	1800	DWIN										
	0500	0955	BLEN										
	0438	1150	WEIS				0506.4	0506.8	1				IIIG
			CULG				0506.5		1				IIIB
			CULG				0507	0655					IIIN,W
			WEIS				0521.5	0522.1	1				IIIG
			WEIS				0554.6	0554.7	1				IIIB
			LEAR				0555.9	0556.7	1				CONT
			CULG				0613	0614	1				IIIG
			WEIS				0613.1	0613.8	2				IIIG
			LEAR				0613.5	0613.9	1				CONT
			WEIS				0634.4	0634.7	3				IIIG
			CULG				0634.5		1				IIIB
			WEIS				0642.3	0642.5	1				IIIB
			WEIS				0644.8	0645.4	1				IIIB
			WEIS				0648.4	0649.3	2				IIIG
			LEAR				0648.8	0649.8	1				CONT
			CULG				0649		1				IIIB
			WEIS				0835.6	0835.7	1				IIIB
			WEIS				0838.5	0838.4	1				IIIB
			WEIS				0853.3	0853.5	1				IIIB
			WEIS				1004.6	1004.9	2				IIIG
			WEIS				1006.7	1007.1	1				IIIG
			WEIS				1031.8	1032.1	1				IIIG
			WEIS				1038.5	1038.6	1				IIIB

SOLAR RADIO EMISSION
SPECTRAL OBSERVATIONS

MAY 1981

DAY	TIMES OF OBSERVATION		STATION	EVENTS									SPECTRAL TYPE
				DECIMETRIC BAND			METRIC BAND			DEKAMETRIC BAND			
	START UT	END UT		START UT	END UT	INT	START UT	END UT	INT	START UT	END UT	INT	
05			WEIS				1043.6	1043.8	1				IIIG
			WEIS				1058.7	1059.6	2				IIIG,U
			WEIS				1102.2	1103.4	2				IIIG
	1155	1759	WEIS				1113	1612	1				I/V
			WEIS				1121.1	1123.6	1				IIIG
			SGMR				1200.0	1304.0	1				B
	1247	2245	HARV				1305		1				IIIB
			WEIS				1335.9	1336.1	2				U
			WEIS				1349.6	1350.3	2				IIIG,U
			HARV				1350		3				IIIG,U
			HARV				1509		2				IIIG
			HARV				1513	1840	2				IN
			WEIS				1614.7	1614.9	2				IIIG,U
			HARV				1615		3				IIIG,U
			WEIS				1709.7	1711.2	3				IIIG
			HARV	1711		1	1710	1711	3				IIIGG,V
			HARV				1841		2				IIIG,U
			HARV	1857	1858	2	1867	1858	3				IIIG,U,V
	2029	2400	CULG				2029	2400					IS,W
			CULG				2104	2259					IIIN,W
			HARV	2121	2122	2	2122		2				
			CULG				2259	2352	1				RSDP,N
			CULG				2259	2314	2				IIIS
			CULG				2259	2400	1			IV	
			CULG							2300	2317		SWF,W
			LEAR				2304.0	2340.0	1				B
			CULG				2313	2333	2			II	
			CULG				2314	2350					IIIS,W
06	0000	0729	CULG				0000	0729					IS,W
			CULG				0008	0347					IIIN,W
			CULG				0045.5	0050	1				IIIG
			CULG				0051.5		1				IIIB
			CULG				0339	0347	1				IIIN
	0437	1801	WEIS				0448.7	0448.8	1				RS
			WEIS				0507.2	0508.2	2				RS
	0641	1800	DWIN										
			WEIS				0646.9	0647.1	1				IIIB
			WEIS				0740.1	0740.3	2				IIIG
			WEIS				0757.6	0757.8	2				U
			WEIS				0802.2	0802.4	2				IIIB
			WEIS				0804.7	0805.0	3				U
			WEIS				0819.2	0820.5	3				IIIG,U
			LEAR				0819.2	0820.4	1				CONT
			WEIS				0853.2	0853.3	2				RS
			WEIS				1026.2	1026.4	1				IIIB
			WEIS				1138.2	1138.6	2				IIIG
			WEIS				1141.2	1144.5	3				IIIGG
			SGMR				1142.7	1157.7	1				CONT
			WEIS				1146.8	1149.2	3				IIIGG
			WEIS				1147.4	1148.1	2				IIIG
			WEIS				1157.4	1158.1	3				IIIG,RS
			SGMR				1212.7	1227.7	1				CONT
	1247	2240	HARV				1448		2				IIIG
			HARV	1515		1							IIIG
			WEIS				1635.7	1635.9	2				IIIB
			HARV				1636		3				IIIG
			HARV				1921		3				IIIG
			HARV				1925	1926	3	1925		3	IIIG,V
			HARV				2002		2				IIIB
	2029	2400	CULG				2043	2400					IIIN,W
			CULG				2141	2302	1				IIIN
			HARV				2149	2150	2				IIIB
			HARV				2223	2230	2				IIIGG
			HARV	2233	2236	3	2233	2236	2				IIIGG
07	0000	0726	CULG				0016	0017.5					IIIN,W
			CULG				0057.5		1				IIIB,U
			CULG				0058.5						IIIB,W
			CULG				0132.5	0133.5	1				IIIG

SOLAR RADIO EMISSION
SPECTRAL OBSERVATIONS

MAY 1981

DAY	TIMES OF OBSERVATION START UT	TIMES OF OBSERVATION END UT	STATION	EVENTS: DECIMETRIC BAND START UT	DECIMETRIC BAND END UT	DECIMETRIC BAND INT	METRIC BAND START UT	METRIC BAND END UT	METRIC BAND INT	DEKAMETRIC BAND START UT	DEKAMETRIC BAND END UT	DEKAMETRIC BAND INT	SPECTRAL TYPE
07			CULG				0207	0208	1				IIIG,U
			CULG				0315	0320					IIIN,W
			CULG				0503	0515	1				IIIN
	0435	0511	WEIS				0506.4	0506.7	1				IIIG
			WEIS				0509.2	0510.7	1				IIIG
	0458	1800	DWIN	0510.3	0510.5	1							IIIG
			DWIN	0511.9	0512.2	1							IIIG
			CULG				0655.5	0656.5	2				IIIG,U
	0526	1803	WEIS				0655.6	0656.2	3				IIIG
			CULG				0658	0712					IIIN,W
			WEIS				0703.9	0706.2	3				IIIG
			CULG				0705.5	0706	1				IIIG
			CULG	0710	0712.5	1							IIIN
			DWIN	0711.8	0712.5	2							IIIG
			LEAR				0812.7	0813.3	1				CONT
			WEIS				0817.8	0813.4	3				IIIG
			DWIN	1006.0	1007.4	1							IV
			WEIS				1033.6	1035.5	3				IIIG
			DWIN	1034.6	1035.0	1							IIIG
			WEIS				1036.9	1037.7	3				IIIG
			DWIN	1037.0	1037.7	1							IIIG
			WEIS				1046.6	1053.0	2				IIIG
			WEIS				1056.7	1056.9	1				IIIB
			DWIN	1146.0	1146.3	1							IIIG
			WEIS				1205.5	1206.0	2				IIIG
	1248	2250	HARV	1249	2207	2	1249	2238	2				IIIN
			WEIS				1350.7	1350.9	1				IIIG
			HARV	1351		2	1351		2				IIIG
			HARV	1412	1413	2	1412	1413	2				IIIG
			HARV	1444		1	1442	1448	2				I
			HARV	1505	1506	2							I
			HARV	1533	1534	3	1533	1534	2				IIIG
			HARV	1542	1550	3	1543	1548	3				IIIGG
			WEIS				1543.1	1550.3	1				IIIGG
			DWIN	1547.0	1547.5	1							IIIG
			HARV	1639	1640	3	1639	1640	3				IIIG
			WEIS				1639.4	1639.5	1				IIIG
			HARV	1702		3	1702		3				IIIG
			WEIS				1702.1	1702.3	2				IIIG
			WEIS				1736.1	1736.2	1				IIIB
			HARV	1739	1754	3	1739	1752	3				IIIGG
			WEIS				1740.3	1743.9	3				IIIGG
			DWIN	1740.5	1744.5	2							IV
			WEIS				1747.2	1748.3	1				IIIG
			WEIS				1751.4	1751.7	1				IIIG
			HARV	1841		3	1841		3				IIIG
			HARV	1902	1910	3	1902	1910	3				IIIG
			HARV	1920		3	1920		3				IIIG
			HARV	1958	2002	3	1958	2002	3				IIIGG
			CULG				2030	2400					IS,W
	2030	2400	CULG				2030	2107					IIIS,W
			CULG				2048.5	2049	1				IIIG
			CULG	2103	2114								IIIN,W
			CULG				2107	2400					IIIN,W
			HARV	2108	2114	2							IIIG
			HARV	2232	2234	3	2233		2				IIIG
			CULG	2232	2233.5	1							IIIG
			CULG	2335	2336								IN,W
08	0000	0728	CULG				0000	0015					IS,W
			CULG	0020.5	0021.5	1							IIIG
			CULG	0042.5	0044.5								DCIM,W
			CULG				0101.5	0102.5					IIIG,W
			CULG	0123	0335								IIIN,W
			LEAR				0400.9	0420.5	1				B
			CULG				0405	0430					IIIS,W
			CULG				0407	0700					IS,W
			CULG				0412.5	0414	1				IIIG
			CULG				0430	0700					IIIN,W
			CULG				0507	0508.5	1				IIIG,U

SOLAR RADIO EMISSION
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DAY	TIMES OF OBSERVATION		STATION	EVENTS									SPECTRAL TYPE
				DECIMETRIC BAND			METRIC BAND			DEKAMETRIC BAND			
	START UT	END UT		START UT	END UT	INT	START UT	END UT	INT	START UT	END UT	INT	
08	0433	1159	WEIS				0507.4	0507.7	2				IIIG
			CULG				0542.5	0544.5	3				IIIG,V
			WEIS				0542.5	0544.3	3				IIIGG
			LEAR				0542.8	0544.2	2				CONT
			CULG				0557	0557.5	1				IIIG
			WEIS				0657.3	0657.6	2				IIIG
			WEIS				0754.2	0754.7	1				IIIG,U
			WEIS				0817.1	0817.3	2				IIIG
			LEAR				0820.2	0821.3	1				CONT
			WEIS				0820.3	0821.7	3				IIIGG
	0655	1810	DWIN	0826.0	0826.7	2							IIIG
			WEIS				0849.5	0850.6	1				IIIG
			DWIN	0915.5	0916.2	2							IIIG
			WEIS				0920.1	0920.3	1				IIIG
			WEIS				1023.3	1023.5	3				IIIB
			DWIN	1052	1100	1						IV	
			WEIS				1059.4	1100.3	3				IIIG
			WEIS				1127.3	1128.6	3				IIIGG,U
			WEIS				1140.6	1141.2	2				IIIG
	1205	1804	WEIS				1219.3	1219.8	2				IIIG
			WEIS				1243.1	1243.2	1				IIIG
	1248	2205	HARV	1333	1335	3							IIIG
			DWIN	1334.0	1334.5	2							IIIG
			HARV				1351		2				IIIG
			HARV				1358	1359	2				IIIG
			HARV	1403	1406	2	1403	1406	2				IIIG
			HARV	1500	1502	3	1500	1502	3				IIIG
			WEIS				1500.2	1501.5	3				IIIGG
			HARV	1505	1516	2						IV	
			DWIN	1508.0	1512.5	1						IV	
			HARV	1523	1524	1							IIIG
			HARV	1614	1620	3	1618	1620	2				IIIG
			DWIN	1618.1	1618.5	2							IIIG
			WEIS				1618.2	1618.8	1				IIIG
			HARV	1814		2	1813	1814	3	1813	1814	2	IIIG
			HARV				1911	1912	1				IIIGW
			HARV				1939		1				IIIB,U
	2029	2400	CULG				2101	2230					IS,C,W
			CULG	2218	2305								IS,W
			CULG				2224						IIIB,W
			CULG				2227		1				IIIB
			CULG							2230	2400	1	SWF
			CULG				2233	2254	1			II	HB
			CULG				2235	2400	2			IV	
			CULG				2308	2321	2				IIIS
			LEAR				2310.0	0937.0	1				B
			CULG				2321	2400					IIIN,W
09			CULG				0000	0728					IIIN,W
			CULG							0000	0200		SWF,W
	0000	0728	CULG				0000	0728	1			IV	
			CULG	0030.5		2							IIIB
			CULG				0112	0318					SCINT
			CULG				0237	0238	2	0237.5	0238	1	IIIG
			CULG	0246		2							IIIB
			CULG	0246	0249.5								DCIM,W
			WEIS				0437	1612	1				I
			CULG				0503	0506	3	0508.5	0509	1	IIIGG
			LEAR				0503.0	0511.5	2				CONT
			WEIS				0503.0	0507.7	3				IIIGG
			CULG				0507.5	0508	2				IIIG
	0431	1612	WEIS				0522	1611	1				IIIS
			CULG				0606	0606.5	1				IIIG
			WEIS				0606.0	0608.7	2				IIIGG
			CULG				0608.5		2				IIIB
			LEAR				0611.0	0613.1	2				CONT
			WEIS				0611.7	0613.6	3				IIIGG
			CULG				0612.5	0613.5	3				IIIG
			WEIS				0848.6	0852.6	3				IIIGG
			WEIS				0856.6	0857.9	3				IIIG

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DAY	TIMES OF OBSERVATION		STATION	EVENTS									SPECTRAL TYPE
				DECIMETRIC BAND			METRIC BAND			DEKAMETRIC BAND			
	START UT	END UT		START UT	END UT	INT	START UT	END UT	INT	START UT	END UT	INT	
09			WEIS				0910.5	0911.3	3				IIIG
			WEIS				0913.5	0914.4	3				IIIG
			WEIS				1223.7	1225.2	3				IIIG
			SGMR				1224.5	1225.2	1				V
			WEIS				1244.6	1246.1	2				IIIG
			SGMR				1244.9	1245.2	1				CONT
			WEIS				1251.3	1253.7	2				IIIG
			SGMR				1251.7	1253.7	1				S
	1247	2245	HARV				1308	2040	3				I
			HARV				1552		3				IIIG
			HARV	1702		1							IIIG
			HARV				1817	1819	2	1817		2	IIIG
			HARV				1838		1	1838		1	IIIG
			HARV				1903		2	1903		2	IIIG
			HARV	1937	1938	2	1937	1938	1				IIIG
			HARV				2030		1				IIIG
			HARV				2040	2245	2				IN
	2028	2400	CULG				2040	2400					IS,W
			CULG				2044	2200					IIIS,W
			CULG	2116		1							IIIB
			CULG				2128.5	2129	1				IIIG
			CULG				2200	2328					IIIN,W
			CULG				2328	2400					IIIS,W
10	0000	0728	CULG				0000	0728					IS,W
			CULG				0000	0728					IIIN,W
			CULG	0107	0107.5		0107	0108	3	0107.5	0108	2	IIIG
			LEAR				0107.4	0108.1	2				V
			LEAR				0139.2	0139.5	1				V
			CULG				0159		1				IIIB
			CULG				0225		1				IIIB
			LEAR				0225.0	0225.3	1				V
			CULG				0334	0641	1				N,RSDP
			CULG				0352		1				IIIB
			LEAR				0352.2	0352.5	1				V
	0430	0458	WEIS										
			CULG				0458.5		2				IIIB
			LEAR				0458.8	0459.5	1				CONT
	0603	1807	WEIS				0718.8	0743.7	3			II	HARM
			LEAR				0718.9	0729.8	1			II	
			CULG				0719	0728	2			II	
			LEAR				0723.7	0747.5	2			IV	
			WEIS				1237.6	1238.0	2				IIIG
			WEIS				1239.5	1239.8	2				IIIG
			WEIS				1241.1	1240.4	1				IIIG
			WEIS				1248.2	1248.7	1				IIIG
			WEIS				1252.3	1252.6	1				IIIG
	1248	2255	HARV	1258		1							IIIG
			HARV	1302	1334	3						IV	
			HARV				1325	1558	2				IN
			HARV	1336		2							IIIG
			WEIS				1340.5	1340.6	1				RS
			HARV	1359	1401	3							IIIG
			WEIS				1455.7	1455.9	1				IIIB
			WEIS				1502.7	1502.8	1				RS
			HARV				1600	1613	3				I
			HARV	1621		2							IIIG
			WEIS				1638.8	1639.3	2				IIIG
			HARV	1639		3	1639		3				IIIG
			HARV				2007		2	2007		2	IIIG
	2028	2320	CULG				2040	2320					IS,W
			CULG	2047	2047.5	1	2047	2047.5	1				IIIG
			HARV	2047			2047						IIIG
			CULG				2109	2320					IIIN,W
11	0040	0728	CULG				0040	0125					IS,W
			CULG				0040	0728					IIIN,W
			CULG				0120	0205	1				N,RSDP
			CULG				0235.5	0236	1				IIIG
			CULG				0239.5		1				IIIB

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DAY	TIMES OF OBSERVATION START UT	TIMES OF OBSERVATION END UT	STATION	EVENTS: DECIMETRIC BAND START UT	DECIMETRIC BAND END UT	DECIMETRIC BAND INT	METRIC BAND START UT	METRIC BAND END UT	METRIC BAND INT	DEKAMETRIC BAND START UT	DEKAMETRIC BAND END UT	DEKAMETRIC BAND INT	SPECTRAL TYPE
11			LEAR				0324.3	0325.5	1				CONT
			CULG	0353.5	0354	1	0353.5	0354	1				IIIG
			CULG	0357	0706								IIIN,W
			CULG				0400	0550					IN,W
			CULG	0403	0404	1							IIIG
			CULG				0550	0728					IS,W
			LEAR				0640.6	0645.5	1				CONT
			CULG				0643	0644	1				IIIG
	0527	1327	WEIS				0748.0	0748.4	1				IIIG
	1247	2300	HARV	1401	1402	2	1401	1402	2				IIIG
	1050	1800	DWIN	1509.5	1509.8	1							IIIG
	1331	1807	WEIS				1509.6	1510.0	2				IIIG
			HARV	1510		2	1510		2				IIIG
			HARV	1632		1	1632		1				IIIG
			HARV	1635	1637	3	1635	1637	3	1635	1636	3	IIIG
			WEIS				1635.3	1635.7	3				IIIG
			SGMR				1635.3	1635.6	3				V
			HARV	1731		3							I
			HARV	1853	1854	3	1853	1854	3	1853	1854	3	IIIG
			SGMR				1853.5	1853.7	1				V
			HARV				1910	2018	3				I
			HARV				1928	1930	2				IIIG
			HARV	2021		2							IIIB
			HARV				2040		2				IIIB
	2028	2400	CULG				2045	2400					IS,W
			CULG	2048	2327		2048	2400					IIIN,W
			CULG	2049	2050	1	2049	2050	1				IIIG
			HARV	2049	2050	3	2049	2050	3	2049	2050	2	IIIG
			CULG				2125.5		1				IIIB
			HARV				2205	2206	1				IIIG
			HARV				2252	2253	2				IIIB
			CULG				2252.5		1				IIIB
			HARV				2257		2				IIIB
12	0000	0728	CULG				0000	0210					IN,W
			CULG				0008.5		2				IIIB
			LEAR				0008.6	0009.0	1				CONT
			CULG				0024	0634					IIIN,W
			CULG				0025	0026					UNCLF
			CULG	0028	0029	1							IIIG
			CULG	0030	0321								IIIN,W
			LEAR				0111.8	0112.3	1				CONT
			CULG				0112		1				IIIB
			LEAR				0138.2	0138.6	1				CONT
			CULG				0138.5		1				IIIB
			CULG	0200	0252		0210	0240					IS,W
			LEAR				0216.1	0217.2	1				CONT
			CULG				0230.5		1				IIIB
			CULG				0240	0400	1				IS,C
			CULG				0245	0300					SCINT
			CULG				0248	0249	2	0248	0248.5	1	IIIG
			CULG				0339	0339.5	3				IIIB
			CULG				0400	0639					IS,W
			LEAR				0437.9	0441.2	1				CONT
			CULG				0439		1				IIIB
	0429	1808	WEIS				0439.4	0440.4	2				IIIG
			CULG				0440.5		1				IIIB
	0450	1800	DWIN										
			CULG	0454	0728								IS,W
			WEIS				0616.7	0616.8	1				IIIB
			CULG				0634	0705					IIIS,W
			WEIS				0637.8	0638.1	1				IIIG
			CULG				0639	0728	1				IS,DC
			WEIS				0640.4	0641.1	1				IIIG
			WEIS				0933.9	0935.7	3				IIIGG
			WEIS				0958.5	0958.6	1				IIIB
			WEIS				1024.2	1024.4	1				IIIB
			WEIS				1026.5	1026.7	1				IIIB
			WEIS				1042.1	1048.1	2				IIIG
			WEIS				1053.2	1054.1	1				IIIG

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DAY	TIMES OF OBSERVATION		STATION	EVENTS									SPECTRAL TYPE
				DECIMETRIC BAND			METRIC BAND			DEKAMETRIC BAND			
	START UT	END UT		START UT	END UT	INT	START UT	END UT	INT	START UT	END UT	INT	
12			WEIS				1059.1	1059.2	1				IIIB
			WEIS				1142.7	1143.0	2				IIIG
	1248	2315	HARV				1248	1940	2				I
			WEIS				1313.8	1314.0	1				IIIB
			WEIS				1350.0	1350.1	1				IIIB
			WEIS				1429.4	1429.5	1				IIIB
			WEIS				1613.7	1613.8	1				IIIB
			WEIS				1650.9	1651.1	1				IIIB
			HARV				1651		2	1651		2	IIIG
			WEIS				1659.1	1659.2	1				IIIB
			HARV				1713	2018	2	1713	2018	2	IIIN
			WEIS				1713.5	1713.7	1				IIIB
			HARV	1751		2							IIIG
			HARV	1851		2	1851		2				IIIG
			HARV	1929	1930	3							IIIG
			HARV	2045		2							IIIB
	2031	2400	CULG				2052	2400					IN,W
			CULG				2148	2400					IIIN,W
			CULG				2219.5		1				IIIB
			HARV				2220		2				IIIB
			CULG	2332.5	2333.5		2332.5	2333.5					IIIG,W
			CULG	2351.5	2355	1	2351.5	2355	1				IIIGG
13	0000	0728	CULG				0007	0350					IIIN,W
			CULG	0013	0014								IIIG,W
			CULG	0227	0228	2	0227	0228	2				IIIG
			CULG	0230.5	0231	2	0230.5	0231	1				IIIG
			CULG				0252	0535					IS,W
			CULG				0350	0420	1				IIIS
			CULG							0350	0550	2	SWF
			CULG	0352	0552	1	0357	0520	1				CONT
			CULG				0420	0435					IIIS,W
			CULG				0435	0536					IIIN,W
	0427	0620	WEIS				0523.4	0526.1	1				IIIG
			CULG				0607	0607.5	1				RSDP
			CULG				0607	0607.5	1				IIIG
			WEIS				0607.1	0607.6	1				IIIG
	0450	1800	DWIN	0716.5	0716.7	2							IIIG
	0628	1809	WEIS				0804.6	0805.3	1				IIIG
			WEIS				0808.4	0808.7	1				IIIG
			WEIS				0941.1	0941.7	3				IIIG
			WEIS				1048.1	1049.8	2				IIIG
	1247	2245	HARV				1800	1803	2				IIIG
			HARV				1831	1835	2	1831	1835	2	IIIG
			HARV				1907	1909	2				IIIG
			HARV				1943	1944	2				IIIG
			HARV				2031		2				IIIG
			HARV				2207	2212	3				IIIG
	2028	2400	CULG				2207	2212					IIIN,W
			CULG				2346.5	2347					IIIG,W
14	0000	0728	CULG										
			CULG				0413.5						IIIB,W
			CULG				0610	0616					IIIN,W
			CULG	0631	0631.5		0631						IIIG,W
	0450	1800	DWIN	0835	0913	2						IV	F
	0529	1657	WEIS				0838.0	0902.3	2				
			WEIS				0839.1	0841.6	2				IIIGG
			WEIS				0844.3	0906.6	3			II	HARM
			LEAR				0844.3	0851.2	1			II	
			WEIS				0849.6	0944.0	3				IIIS
			LEAR				0900.0	0935.0					B
			WEIS				1121.1	1122.9	2				IIIG
			WEIS				1140.5	1140.7	1				IIIG
			WEIS				1231.7	1232.2	2				IIIG
	1347	2305	HARV	1516	1517	1	1516	1517	2				IIIG
	1223	1745	BLEN				1516.3	1516.6	2				IIIG
			WEIS				1516.4	1516.6	2				IIIG
			HARV				1624		2	1624		2	IIIG
			WEIS				1624.2	1624.4	2				IIIG

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DAY	TIMES OF OBSERVATION START UT	TIMES OF OBSERVATION END UT	STATION	EVENTS DECIMETRIC BAND START UT	DECIMETRIC BAND END UT	DECIMETRIC BAND INT	METRIC BAND START UT	METRIC BAND END UT	METRIC BAND INT	DEKAMETRIC BAND START UT	DEKAMETRIC BAND END UT	DEKAMETRIC BAND INT	SPECTRAL TYPE
14			BLEN	1647.8	1647.8	1							IIIB
			HARV				1648		2				IIIG
			HARV				1904	1905	2				IIIG
			HARV	2015	2016	2	2015	2016	3				IIIG
			HARV				2041		3				IIIG
	2028	2400	CULG	2048.5		1	2048.5		1				IIIB
			HARV	2049		3	2049		3				IIIG
			CULG				2055	2259					IIIN,W
			HARV				2118	2122	2				IIIG
			CULG	2221.5	2222								IIIG,W
			HARV	2222	2223	1	2222	2223	2				IIIG
			HARV				2232	2234	2				IIIG
			HARV				2249	2250	2				IIIG
			CULG	2312			2312	2312.5					IIIG,W
15	0000	0728	CULG	0132	0157		0132	0156					IIIN,W
			CULG	0409									IIIB,W
			CULG	0430.5	0432	1	0431	0432	1				IIIG
	0425	1755	WEIS				0431.2	0431.9	2				IIIG
	0445	1745	BLEN				0452.6	0452.7	1				IIIG
			BLEN	0454.0	0454.0	1							IIIB
	0450	1800	DWIN	0454.0		2							IIIB
			WEIS				0509.5	0509.6	1				IIIB
			BLEN				0518.9	0520.2	2				IIIG
			CULG	0519	0611		0509	0658					IIIN,W
			WEIS				0519.2	0520.3	2				IIIG
			CULG	0520		1	0520		1				IIIB
			LEAR				0520.2	0520.5	1				V
			DWIN	0540.9	0541.0	1							IIIG
			BLEN	0602.5	0623.2	1	0607.4	0623.2	3				IIIGG,DCIM
			WEIS				0607.3	0608.3	1				IIIG
			CULG				0607.5		1				IIIB
			LEAR				0607.7	0607.9	1				CONT
			WEIS				0620.5	0623.4	3				IIIG,RS
			CULG	0620.5	0621.5	1	0620.5	0623	2				IIIGG,V
			LEAR				0620.9	0623.5	2				CONT
			DWIN	0621.0	0623.2	2						IV	
			CULG	0621.5	0623								DCIM
			WEIS				0630.6	0630.7	1				IIIB
			BLEN				0737.6	0739.9	2				IIIG
			LEAR				0737.7	0738.6	1				CONT
			WEIS				0737.7	0738.6	2				IIIG
			WEIS				0739.7	0740.2	2				IIIG
			WEIS				0748.8	0749.2	2				IIIG
			DWIN	0826.5	0827.3	1							IIIG
			BLEN	0826.5	0836.5	1	0826.5	0827.3	1				IIIG,DCIM
			WEIS				0857.9	0901.2	3				IIIGG
			LEAR				0858.5	0900.8	2				CONT
			BLEN	0858.8	0900.7	2	0857.8	0902.7	2				IIIGG
			DWIN	0900.0	0900.8	2							IIIG
			WEIS				0902.3	0902.7	2				IIIG
			BLEN				0935.0	0936.3	2				IIIGG
			WEIS				0935.2	0938.3	3				IIIGG
			WEIS				1040.8	1041.0	1				IIIB
			WEIS				1045.5	1045.7	1				IIIB
			WEIS				1159.4	1200.2	2				IIIG
			BLEN	1159.4	1204.7	2	1159.4	1204.7	2				IIIGG
			WEIS				1203.6	1204.7	2				IIIG
			WEIS				1240.5	1241.3	1				IIIG
			WEIS				1247.6	1247.7	1				IIIB
			WEIS				1249.6	1249.9	1				IIIB
			WEIS				1254.6	1256.3	1				IIIG
	1247	2300	HARV				1258	1450	2				IC
			HARV				1303		2				IIIG
			DWIN	1303.0	1306.1	1							I
			BLEN	1303.0	1306.1	1	1303.0	1306.1	1				IIIGG
			WEIS				1305	1528	2				IIIN
			SGMR				1313.8	1323.8	1				S
			SGMR				1325.2	1446.3	1				B
			BLEN	1325.6	1325.6	1							IIIB

SOLAR RADIO EMISSION
SPECTRAL OBSERVATIONS

MAY 1981

DAY	TIMES OF OBSERVATION		STATION	EVENTS									SPECTRAL TYPE
				DECIMETRIC BAND			METRIC BAND			DEKAMETRIC BAND			
	START UT	END UT		START UT	END UT	INT	START UT	END UT	INT	START UT	END UT	INT	
15			BLEN				1327.0	1327.4	1				IIIG
			HARV				1450	1700	2				I
			SGMR				1458.1	1458.4	1				III
			HARV	1506	1507	3	1506	1507	3				IIIG
			BLEN	1506.1	1506.5	2	1506.1	1506.5	2				IIIG
			WEIS				1506.2	1506.5	2				IIIG
			WEIS				1701.1	1701.2	2				IIIB
			WEIS				1705.3	1705.5	2				IIIB
			HARV				1907	2300	2				I
			HARV	1937	1938	2							I
	2028	2400	CULG				2051	2330					IS,W
			CULG				2055	2330					IIIS,W
			CULG				2330	2400	1				IIIS
			CULG				2330	2400	1				IS,DC
16			CULG				0000	0233	1				IS,DC
	0000	0728	CULG				0000	0230					IIIS,W
			CULG				0155	0159	1				IIIS
			LEAR				0155.2	0257.8	1				B
			CULG				0230	0406					IIIN,W
			CULG				0233	0355					IS,W
			CULG	0247.5	2248	1							IIIG
			CULG				0355	0728					IN,W
			CULG				0616	0616.5					IIIB,W,U
	0450	1800	DWIN	0750.7		2							IIIB
	0440	1745	BLEN	0810.5	0816.2		0810.5	0816.2	3				IIIG
			DWIN	0812	1000	3						IV	DCIM
			BLEN	0812.5	1105	3	0812.5	1105	3			IV	F
			LEAR				0824.8	0840.7	2			II	
			SGMR				1111.0	2308.0	1				B
			BLEN	1228	1745 D	1	1115	1745	1				C
			DWIN	1229.5	1237.5	1						IV	DCIM
	1247	2315	HARV				1251	1600	3				IC
			BLEN	1312.5	1317.5	2	1312.5	1317.5	2				IIIGG
			BLEN	1421.2	1425.0	1	1421.2	1425.5	2				IIIGG
			BLEN				1606.2	1606.5	1				IIIG
			HARV				1646	1648	2	1646		2	IIIG
			HARV				1920		2	1920		2	IIIG
			HARV				2029	2031	2				IIIG
	2028	2400	CULG				2059	2400					IS,W
			CULG				2105	2400					IIIN,W
			HARV				2107	2108	3	2107	2108	3	IIIG
			CULG				2108	2108.5	1				IIIG
			CULG				2153		1				IIIB
			HARV				2153		3				IIIG
			HARV				2201		2				IIIB
			CULG				2204.5	2205.5	3				IIIG,V
			SGMR				2204.8	2205.3	2				V
			HARV				2205		3	2205			IIIG,V
			CULG				2236.5	2237.5	2				IIIG,U
			HARV				2237	2239	3	2237	2239	2	IIIG,U
			SGMR				2237.0	2237.4	2				V
			CULG				2238.5	2239	1				IIIG
			HARV	2248	2250	3	2248		3				IIIG
			CULG				2321	2321.5	1				IIIG
17	0000	0653	CULG				0000	0653					IS,W
			LEAR				0027.0	0834.0	1				B
			CULG				0056	0653					IIIN,W
			CULG	0114	0114.5								IIIG,W
	0500	1800	DWIN										
			CULG				0535.5		1				IIIB
			CULG				0548	0549.5	1				IIIG
			LEAR				0552.8	0554.3	2				CONT
			CULG	0553	0553.5	1	0552.5	0554.5	2				IIIGG,V
	0440	1745	BLEN	0553.8	0556.0	3	0548.1	0556.0	3				IIIGG
			CULG				0556		1				IIIB
			CULG				0613		1				IIIB
			LEAR				0641.4	0652.5	2				B
			BLEN				0653.2	0656.9	1				IIIG

SOLAR RADIO EMISSION
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MAY 1981

DAY	TIMES OF OBSERVATION		STATION	EVENTS									SPECTRAL TYPE
				DECIMETRIC BAND			METRIC BAND			DEKAMETRIC BAND			
	START UT	END UT		START UT	END UT	INT	START UT	END UT	INT	START UT	END UT	INT	
17			LEAR				0653.5	0657.4	2				CONT
	0720	0728	CULG										
			BLEN				0741.2	0748.3	3				IIIG
			LEAR				0741.3	0741.9	2				CONT
			LEAR				0743.3	0745.1	2				CONT
			BLEN	1213.7	1217.4	2							IIIG
	1230	1815	WEIS				1236	1804	2				IIIS
			BLEN				1353.5	1354.7	2				IIIG
			WEIS				1353.6	1354.7	2				IIIG
	1248	2235	HARV				1354	1355	2				IIIG
			HARV				1433	2100	2				IIIN
			HARV				1536	2235	2				IN
			BLEN				1554.8	1554.8	2				IIIB
			WEIS				1554.8	1555.3	3				IIIG
			SGMR				1554.9	1555.4	2				V
			HARV				1555		3	1555		3	IIIG
			HARV							1715	2053	2	IIIN
			HARV				1744	1804	2	1744	1804	2	IIIGG
			SGMR				1748.2	1758.0	1				CONT
			SGMR				1803.0	1803.3	1				V
			SGMR				1822.9	1823.2	1				V
			HARV				1823		3	1823		3	IIIG
			SGMR				1847.8	1849.3	1				CONT
			HARV				1848	1849	2	1848	1849	2	IIIG
			HARV				1851	1852	3	1851	1852	3	IIIG,V
			SGMR				1851.5	1852.6	2				CONT
			HARV				1858	1900	2	1858	1900	2	IIIG
			SGMR				1859.7	1900.0	1				V
			HARV				1926	1928	2	1926	1928	2	IIIG
			SGMR				1926.4	1939.4	1				CONT
			HARV				1937	1939	2	1937	1939	2	IIIG
			HARV	2016	2018	2							IIIG
	2028	2400	CULG				2046	2400					IS,W
			CULG				2053	2400					IIIN,W
			SGMR				2053.1	2053.4	1				V
			HARV				2112	2118	2	2112	2116	2	IIIG
			CULG				2114	2342	1				IIIN
			HARV				2126	2130	2				IIIG
			CULG	2128.5	2130.5								DCIM,W
			HARV				2142	2145	2				IIIG
18	0000	0728	CULG				0000	0200	1				IS,DC,C
			CULG				0008	0728					IIIN,W
			CULG	0017.5	0023	1	0017.5	0023	2				IIIGG
			CULG	0031.5	0033.5	1	0030.5	0034	2				IIIGG
			CULG				0200	0728					IS,DC,W
			LEAR				0201.8	0203.8	1				CONT
			CULG	0215	0218		0215	0234					SCINT
			CULG				0329	0614	1				IIIN
			LEAR				0333.3	0335.6	2				CONT
			CULG				0333.5	0334	2				IIIG
	0440	0655	BLEN				0440 E	0656 D	2				I
			CULG				0525		2				IIIB
			LEAR				0525.2	0525.4	1				CONT
	0528	1815	WEIS				0528	1738	2				IIIN
			LEAR				0530.4	0530.9	1				CONT
			CULG				0559		2				IIIB
			WEIS				0559.0	0559.3	2				IIIG
			LEAR				0559.1	0559.3	1				CONT
			WEIS				0614.4	0614.6	2				IIIG
			CULG				0614.5		2				IIIB
			LEAR				0618.3	0618.5	1				CONT
			LEAR				0736.3	0736.8	1				CONT
			LEAR				0744.3	0744.7	1				CONT
			WEIS				0802.0	0905.0	3				IIIGG
			LEAR				0802.8	0820.5	1				S
	0657	1650	DWIN	0803	0854	3						IV	P
			WEIS				0811.0	0852	3				CONT,P
			LEAR				0824.6	0933.0	1				B
	1247	2255	HARV				1252	2255	3				I

SOLAR RADIO EMISSION
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MAY 1981

DAY	TIMES OF OBSERVATION START UT	TIMES OF OBSERVATION END UT	STATION	EVENTS: DECIMETRIC BAND START UT	DECIMETRIC BAND END UT	DECIMETRIC BAND INT	METRIC BAND START UT	METRIC BAND END UT	METRIC BAND INT	DEKAMETRIC BAND START UT	DEKAMETRIC BAND END UT	DEKAMETRIC BAND INT	SPECTRAL TYPE
18			HARV				1641	1642	3	1641	1642	3	IIIG,V
			WEIS				1641.2	1641.8	3				IIIG
			SGMR				1641.3	1641.9	1				V
			HARV				1733	1738	2	1733	1738	2	IIIG
			HARV				1801		2	1801		2	IIIG
			HARV				1819	1820	2	1819	1820	2	IIIG
			HARV				1822	1824	3	1822	1824	3	IIIG,V
	2028	2400	CULG				2045	2400					IS,W
			CULG				2045	2400					IIIN,W
			HARV				2052		2	2052			IIIG
			CULG				2138	2210	1				DC,IIIS
			CULG	2312.5	2313								DCIM,W
			CULG				2317						RSDF,W
			CULG	2355	2358	1							IIIG,N
19			CULG				0000	0546					IIIN,W
	0000	0728	CULG				0000	0350	1				IS
			LEAR				0100.8	0101.5	1				CONT
			CULG	0218	0218.5	2							IIIG
			CULG	0219	0220								IIIG,W
			LEAR				0349.4	0350.9	1				CONT
			CULG				0350	0555					IS,W
			CULG				0350	0351.5	2				IIIGG
			LEAR				0350.4	0351.9	1				CONT
			CULG				0355	0356	1				IIIG
			LEAR				0355.2	0356.1	1				CONT
			CULG	0357	0357.5	1							IIIG
	0421	0546	WEIS										
			CULG				0510	0510.5	1				IIIG,Z
			WEIS				0530.2	0533.2	3				IIIG
			LEAR				0530.2	0535.4	1				CONT
			CULG	0531.5	0532	1	0531.5	0532	2				IIIG
			WEIS				0544	1711	2				IIIN
			CULG				0546	0707					IIIS,W
			LEAR				0547.1	0548.9	1				S
			CULG				0547.5		2				IIIB
			CULG				0548	0728	1				IIIN
			CULG				0555	0727	1				IS
	0550	1816	WEIS				0634	1816	2				IDC
			CULG				0644	0650					SLOWDRIFT
			CULG				0644	0650	1				IIIS,Z
			LEAR				0644.1	0932.0	1				B
	0650	1800	DWIN										
			WEIS				0902.6	0903.1	3				IIIB
			WEIS				1050.4	1051.3	3				IIIG
			SGMR				1114.4	1114.6	1				III
	1247	2305	HARV				1252	2305	3				IC
			HARV				1637	2126	2	1654	2126	2	IIIN
			HARV				1707	1712	2	1707	1711	2	IIIGG
			HARV				1833		2				IIIG
	2028	2400	CULG				2046	2400	1				IS,C
			CULG				2107	2230					IIIS,W
			CULG				2125.5		1				IIIB
			CULG				2130	2400					IIIN,W
			CULG				2334	2334.5	1				IIIG
20	0000	0728	CULG				0000	0728	1				IS,C
			CULG				0000	0100					IIIN,W
			CULG				0007	0011	3				IIIGG
			LEAR				0007.2	0009.5	1				CONT
			CULG				0100	0728					IIIS,W
			CULG				0134	0728	1				IIIN
			LEAR				0150.7	0932.0	1				B
			LEAR				0412.0	0416.2	2				CONT
			CULG				0413	0413.5	3				IIIG
			CULG				0415	0416	3				IIIG
	0419	1158	WEIS				0428	1811	3				IS
			CULG	0432.5		2	0432	0432.5	2				IIIG
			WEIS				0532	1741	2				IIIN
			WEIS				0540.3	0540.5	2				IIIG

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DAY	TIMES OF OBSERVATION		STATION	EVENTS									SPECTRAL TYPE
				DECIMETRIC BAND			METRIC BAND			DEKAMETRIC BAND			
	START UT	END UT		START UT	END UT	INT	START UT	END UT	INT	START UT	END UT	INT	
20	1204	1817	WEIS				0550	1144	3				CONT
	1234	2317	HARV				1235	1530	3				IC
			HARV				1413	1414	3				IIIG
			WEIS				1413.3	1414.1	3				IIIG
			HARV				1419	2130	2	1419	2130	2	IIIN
			HARV				1530	2152	3				IN
			HARV				1557	1558	2	1557	1558	2	IIIG
			SGMR				1557.6	1557.8	1				V
			WEIS				1557.6	1557.8	2				IIIG
	0640	1800	DWIN	1736.6	1736.9	1						IV	
			HARV	1737		2	1737		3				IIIG
			HARV	1740		2	1740		3				IIIG
			HARV	1825		2	1825		3				IIIG
	2028	2400	CULG				2049	2339	1				IS,C
			CULG				2050	2400	1				IIIS
			CULG				2132	2400	1				N,RSDP
			CULG				2134.5	2135.5	1				DP
			HARV				2152	2315	3				IC
			CULG	2316	2316.5		2316	2316.5					IIIG,W
			HARV				2316	2317	3				IIIG
			CULG				2339	2400	2				IS,C,DC
			LEAR				2341.0	0701.0	1				B
			CULG				2354.5		1				IIIB
21			CULG				0000	0728	1				IIIS
	0000	0728	CULG				0000	0728	2				IS,C,DC
			CULG	0010	0728								IN,W,C
			CULG				0029	0042	2				IIIS
			CULG							0033	0035	1	IIIS
			CULG				0042	0705	1				IIIS
	0419	0938	WEIS				0419	1801	3				IS
			WEIS				0634	1301	2				IIIN
	0757	1750	BLEN				0757 E	1200	1				I
			SGMR				1121.5	1127.0	1				V
	0500	1800	DWIN	1150	1555	2						IV	F
			BLEN				1156.5	1200.3	2				IIIG
	1018	1801	WEIS				1200	1801	3				CONT
			SGMR				1206.8	0000.0	1				B
			BLEN	1221.5	1600	2	1221.5	1600	3			IV	F
	1235	2335	HARV	1302	2000	3	1302	2200	3				IC
	2029	2400	CULG				2042	2400	2				IS,C,DC
			CULG	2047	2400	1							CONT
			HARV				2200	2335	2				I
			LEAR				2309.0	0931.0	2				B
22			CULG	0000	0715	1							CONT
	0000	0715	CULG				0000	0715	2				IS,C,DC
	0430	1750	BLEN				0430 E	1400	2				C
	0443	1820	WEIS				0449	1747	2				I
			BLEN				0455	0535	2				I,DC
			CULG				0510	0715	1				IN
			CULG				0622	0623.5	1				DCIM
			BLEN	0622.0	0631.8	2	0622.0	0631.8	3				IIIGG
			CULG	0630.5	0632	1							IIIG
	0707	1406	DWIN										
			SGMR				0920.0	1800.0	1				B
			BLEN	1126.2	1126.2	1	1126.2	1126.2	1				IIIB
			WEIS				1140	1148	2				CONT
			WEIS				1222	1657	2				IIIN
			BLEN	1225.6	1226.8	2	1225.6	1226.8	2				IIIG
	1234	2245	HARV				1237	2245	2				I
			HARV				1618	1937	2	1620	1937	2	IIIN
	2029	2400	CULG				2047	2400	1				IS,C,DC
			CULG				2109	2400					IIIN,W
23	0000	0728	CULG				0000	0728	1				IS,C
			CULG				0059	0728					IIIN,W
	0416	1043	WEIS				0420	0603	2				IS
			WEIS				0637.7	0637.9	1				IIIB
	1104	1821	WEIS				1105	1436	1				IN

SOLAR RADIO EMISSION
SPECTRAL OBSERVATIONS

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DAY	TIMES OF OBSERVATION		STATION	EVENTS									SPECTRAL TYPE
				DECIMETRIC BAND			METRIC BAND			DEKAMETRIC BAND			
	START UT	END UT		START UT	END UT	INT	START UT	END UT	INT	START UT	END UT	INT	
23	1234	2325	HARV				1235	1440	3				I
			HARV				1440	1828	2				IN
			HARV				1828	2325	2				I
	2029	2400	CULG	2049	2239	1							IS,DC
			CULG				2054	2400					IS,W
			CULG				2056	2400					IIIS,W
			CULG				2201	2201.5	1				IIIG
			HARV				2201	2202	2				IIIG
			CULG	2239	2400								IS,W
24			CULG				0000	0729					IIIN,W
	0000	0729	CULG	0000	0211								IN,W
			CULG				0000	0729					IS,W
			CULG				0040	0040.5	1				IIIB
			LEAR				0040.2	0040.6	1				V
			LEAR				0105.1	0114.8	1				CONT
			CULG	0118.5	0123								IIIN,W
			CULG	0211	0410		0211	0410					IS,W
			CULG				0517	0517.5	1				IIIG
	0416	1450	WEIS				0517.3	0517.9	1				IIIG
			CULG				0517.5	0518	1				IIIG
	0525	1800	DWIN										
			WEIS				0622.8	0623.3	2				IIIG
			CULG	0623		1	0622.5	0623.5	1				IIIG
			LEAR				0623.1	0623.3	1				CONT
			LEAR				0650.9	0651.2	1				CONT
			WEIS				0650.9	0651.3	2				IIIG
			CULG				0651		1				IIIB,U,Z
			CULG				0707.5		1				IIIB
			LEAR				0707.7	0707.9	1				CONT
			WEIS				0707.7	0708.0	3				U
			WEIS				0755.3	0756.2	2				IIIG
			WEIS				0835.3	0836.7	3				IIIG
			LEAR				0840.2	0841.3	2				CONT
			WEIS				0849.7	0849.9	2				IIIB
			WEIS				0956.5	0956.8	2				IIIG
			WEIS				1010.9	1011.3	1				IIIG
			WEIS				1046.7	1048.0	3				IIIG
			SGMR				1046.9	1047.2	2				III
			WEIS				1120.7	1121.7	2				IIIG
			WEIS				1125.9	1126.9	2				IIIG
			WEIS				1207.2	1211.8	3				IIIG
			SGMR				1209.8	1211.7	1				CONT
	1234	2255	HARV	1247		3	1247		2				IIIG
			HARV				1305	2255	2				IN
			HARV				1442	1443	2				IIIG
			WEIS				1442.4	1442.8	2				IIIG
			HARV	1505	1513	3	1509	1510	2				IIIG
	1514	1549	WEIS										
			HARV	1656	1657	3	1656	1657	2				IIIG
	1700	1821	WEIS										
			HARV				1726	1737	3				DC
			HARV	1806	1807	2	1806	1807	2				IIIG
	2029	2400	CULG	2050	2400		2050	2400					IS,W
			CULG				2059	2225					IIIS,W
			CULG				2218.5	2220	3				IIIG
			HARV				2219	2220	3	2219	2220	3	IIIG
			CULG				2225	2400					IIIN,W
25			CULG				0000	0729					IIIN,W
	0000	0729	CULG	0000	0729		0000	0115					IS,W
			LEAR				0035.0	0314.0	1				B
			CULG				0035.5	0039	1				IIIN
			CULG	0108	0700								IIIN,W
			CULG	0651.5	0652	1	0651.5	0652	1				IIIG
	0516	1823	WEIS				0651.7	0653.9	2				IIIG
			LEAR				0651.7	0654.3	1				V
			WEIS				0721.3	0728.7	2				IIIGG
			LEAR				0721.3	0729.6	1				V
			WEIS				0803.4	0803.7	1				IIIG

SOLAR RADIO EMISSION
SPECTRAL OBSERVATIONS

MAY 1981

DAY	TIMES OF OBSERVATION		STATION	EVENTS									SPECTRAL TYPE
				DECIMETRIC BAND			METRIC BAND			DEKAMETRIC BAND			
	START UT	END UT		START UT	END UT	INT	START UT	END UT	INT	START UT	END UT	INT	
25	0852	1755	BLEN				0852 E	0945	2				I
			WEIS				0904.4	0905.7	2				IIIG
	1234	2300	HARV				1257	2300	1				IN
			HARV	1436		1							I
			HARV				1500		1				IIIB
			WEIS				1500.4	1500.5	1				IIIB
			BLEN	1525.6	1525.6	1							IIIB
			HARV	1526		2	1526		2				IIIB
			HARV	1705		3							IIIG
			BLEN	1705.1	1705.1	1							IIIB,RS
			HARV	1949	2300	1							IN
	2029	2400	CULG	2105	2400								IN,W
			CULG	2335	2341								IIIN,W
26	0000	0729	CULG				0007	0729					IIIN,W
			CULG	0155	0156	1	0155	0156	1				IIIG
			CULG	0202.5	0203.5		0202.5	0203.5					IIIG,W
			CULG	0204	0205								IIIG,W
	0414	0917	WEIS										
	0621	1309	DWIN										
	0425	1755	BLEN				1155	1410	1				I
	1234	2300	HARV	1245	2300	2	1245	2300	2				IN
			HARV	1335	1338	1	1335	1338	1				IIIG
			BLEN	1335.5	1347.3	1	1335.5	1347.3	1				IIIG
			HARV				1347	1349	2				IIIG
			HARV	1726	1732	3	1725	1734	2	1727	1730	2	IIIGG,V
			BLEN	1726.2	1733.3	2	1725.1	1736.4	2				IIIGG,RS
	0911	1824	WEIS				1726.8	1730.5	2				IIIGG,DCIM
			SGMR				1727.5	1730.6	1				CONT
			HARV				1930	1931	1				IIIG
			HARV	1941	1942	2	1941		2				IIIG
	2029	2400	CULG	2052	2315								IS,W
			HARV				2059	2102	3				IIIG
			CULG	2059.5	2100	2			1				IIIG
			CULG	2100	2107		2101	2400					IIIN,W
			HARV				2105	2107	1				IIIG
			CULG	2150	2151	2	2150	2151	1				IIIG
			HARV	2150	2151	2	2150	2151	2				IIIG
			HARV	2155	2156	2	2155	2156	3	2155	2156	2	IIIG,V
			CULG	2155	2155.5	3	2155	2156	3				IIIGG
			CULG				2316	2317	1				IIIG,U
			LEAR				2327.4	2327.6	1				CONT
27	0000	0629	CULG				0000	0629					IIIN,W
			LEAR				0259.2	0315.2	1				B
			CULG				0418	0418.5	2				IIIG
	0425	0500	BLEN										
	0413	1509	WEIS				0811.0	0813.7	2				IIIG
	0740	1755	BLEN				0811.1	0813.2	1				IIIG
			BLEN	0912.2	0920.3	3	0912.2	0929.5	3				IIIGG
			WEIS				0912.9	0915.4	2				IIIG
	0629	1800	DWIN	0914.5	0915.2	1							IIIG
			WEIS				0926.7	0926.9	2				IIIG
			WEIS				0942.8	0943.3	2				IIIG
			WEIS				1031.1	1031.3	2				IIIG
			WEIS				1112.4	1112.7	1				IIIG
			WEIS				1123.2	1139.4	3				IIIGG/V
			WEIS				1125.9	1127.9	2				IIIG
			BLEN	1134.6	1142.8	3	1136.1	1142.8	3				IIIGG
			DWIN	1136.6	1137.4	1							IIIG
			SGMR				1136.7	1138.6	3				CONT
			WEIS				1142.3	1143.0	2				IIIG
	1234	2320	HARV				1300	1301	1				IIIG
			WEIS				1300.0	1301.3	1				IIIG
			SGMR				1300.7	1301.4	1				V
			HARV	1312	1340	1	1312	1448	1				IN
			HARV				1401	1402	2				IIIG
			SGMR				1401.5	1401.7	1				V
			BLEN				1401.5	1401.7	1				IIIG
			WEIS				1417.4	1417.8	1				IIIB

SOLAR RADIO EMISSION
SPECTRAL OBSERVATIONS

MAY 1981

DAY	TIMES OF OBSERVATION		STATION	EVENTS									SPECTRAL TYPE
				DECIMETRIC BAND			METRIC BAND			DEKAMETRIC BAND			
	START UT	END UT		START UT	END UT	INT	START UT	END UT	INT	START UT	END UT	INT	
27			BLEN				1426.8	1428.3	1				IIIG
			HARV	1427		1	1427	1428	2	1428		2	IIIGG
			WEIS				1428.8	1428.4	3				IIIGG
			HARV	1455	1502	2	1455	1502	2	1459		2	IIIG
			BLEN	1455.0	1458.7	1							IIIG
	0629	1800	DWIN	1456.6	1456.7	1							IIIG
			WEIS				1459.3	1501.8	3				IIIG
	1513	1825	WEIS				1535.9	1537.3	3				IIIGG
			BLEN	1535.9	1536.1	3	1535.9	1536.8	2				IIIG,U
			HARV	1536	1537	3	1536	1537	3	1536	1537	2	IIIGG
			SGMR				1536.1	1536.5	1				V
			HARV				1558	1600	1	1558	1600	1	IIIG
			WEIS				1558.3	1559.6	1				IIIG
			WEIS				1703.7	1732.2	3				IIIGG
			BLEN	1730.6	1732.5	2	1730.6	1731.7	2				IIIGG
			DWIN	1730.9	1731.1	1							IIIG
			HARV	1731	1732	3	1731	1732	3	1732		3	IIIGG,V
			SGMR				1731.3	1732.1	1				V
	2029	2400	CULG				2127	2400					IIIN,W
			CULG	2145	2145.5	1	2144.5	2145.5	3				IIIG,U
			HARV				2145		3	2145		3	IIIG,U,V
			HARV	2217	2218	1	2217	2218	1				IIIG
			CULG	2217	2217.5								IIIG,W
			CULG				2327	2327.5	3				IIIG,U
28	0000	0729	CULG				0000	0729					IIIN,W
			CULG	0009	0012								IIIN,W
			LEAR				0200.0	0235.0	1				S
			CULG	0438	0447								IIIN,W
	0425	1755	BLEN				0443.7	0450.1	2				IIIG
			CULG				0450		1				IIIB
			BLEN	0605.7	0607.5	2	0605.7	0633.1	2				IIIGG
	0500	1800	DWIN	0605.9	0607.6	1						IV	
			CULG				0606		2				IIIB
	0412	1726	WEIS				0606.2	0606.4	2				IIIG
			LEAR				0606.2	0606.8	1				CONT
			CULG				0651	0651.5	1				IIIB,U
			BLEN				0651.2	0651.5	2				IIIG
			BLEN	0924.3	0924.3	1	0924.3	0924.3	1				IIIB
			WEIS				0924.3	0924.6	2				IIIG
			WEIS				1235.7	1235.9	1				IIIG
	1234	1700	HARV				1236		2				IIIG
			HARV	1304	1305	3							IIIG
			BLEN	1304.1	1304.5	2							IIIG
			BLEN				1325.5	1325.7	2				IIIG
			DWIN	1421.9	1422.1	1							IIIG
			HARV				1507	1508	2				IIIG
			BLEN				1507.3	1508.0	2				IIIG
	2029	2400	CULG				2120	2400					IIIN,W
			CULG	2317		1	2317		1				IIIB
			CULG				2320	2321	1				IIIG
			CULG				2357	2357.5	1				IIIG,U
29	0000	0729	CULG				0029	0345					IN,W
			CULG				0053	0345					IIIN,W
			CULG				0115	0116	1				IIIG
			CULG				0123	0128	2				IIIN
			LEAR				0124.2	0126.7	1				CONT
			CULG	0125.5	0128	1							IIIN
			CULG	0211.5	0213	1							IIIG
			LEAR				0308.0	0308.6	1				CONT
	0507	0825	WEIS										
	0643	0850	DWIN										
	0930	1800	DWIN										
	0827	1827	WEIS				1245.7	1245.8	1				IIIB
			WEIS				1332.0	1332.3	1				IIIB
	0425	1755	BLEN	1505.9	1505.9	1	1505.9	1505.9	1				IIIB
	1234	1720	HARV				1506		2				IIIB
			WEIS				1734.9	1735.1	1				IIIB
	2030	2400	CULG										

SOLAR RADIO EMISSION
SPECTRAL OBSERVATIONS

MAY 1981

DAY	TIMES OF OBSERVATION		STATION	EVENTS									SPECTRAL TYPE
				DECIMETRIC BAND			METRIC BAND			DEKAMETRIC BAND			
	START UT	END UT		START UT	END UT	INT	START UT	END UT	INT	START UT	END UT	INT	
30	0000	0730	CULG				0232.5	0233					IIIG,W
			CULG				0409	0410					IIIG,W
			CULG	0433	0433.5								IIIG,W
	0500	1800	DWIN										
			CULG				0614						IIIB,W
			CULG				0615.5						IIIB,W
			CULG	0647	0647.5		0647	0647.5					IIIG,W
	0420	1755	BLEN	0647.0	0647.2	1	0647.0	0647.2	1				IIIG
			CULG				0657						IIIB,W
			BLEN				1343.6	1344.9	2				IIIG
	0955	1828	WEIS				1343.7	1344.1	1				IIIG
	1335	2315	HARV				1344		2				IIIG
			HARV				1731	1732	2				I
	2030	2400	CULG										
31	0000	0730	CULG	0127.5									IIIB,W
			CULG				0248						IIIB,W
	0410	0533	WEIS										
	0500	1800	DWIN										
			CULG				0521	0525					IIIN,W
			CULG				0653	0653.5					IIIG,W
	0543	1829	WEIS				1320.7	1320.9	2				IIIG
	1334	2240	HARV				1321	1324	1				IIIG
			WEIS				1323.4	1323.8	2				IIIG
			SGMR				1323.5	1323.8	1				V
			HARV	1428		2	1428	1430	1				IIIG
	0823	1755	BLEN	1428.0	1429.5	1							IIIG
			HARV	1806		3							IIIG
			HARV				1956	1957	1				IIIG
	2030	2400	CULG										

The symbols used under the column heading SPECTRAL TYPE have the following definitions:

B = Single burst
G = Small group (< 10) of bursts
GG = Large group (> 10) of burst
C = Underlying continuum (particularly with Type I)
S = Storm in the sense of intermittent but apparently connected activity
N = Intermittent activity in this period
U = U-shaped burst of Type III

RS = Reverse slope burst
DP = Drifting pairs
DC = Drifting Chains
H = Herringbone
W = Weak
P = Pulsations
CONT = Continuum
UNCLF = Unclassified activity
DCIM = Fast drift

COSMIC RAY INDICES

(Neutron Monitors)

MAY 1981

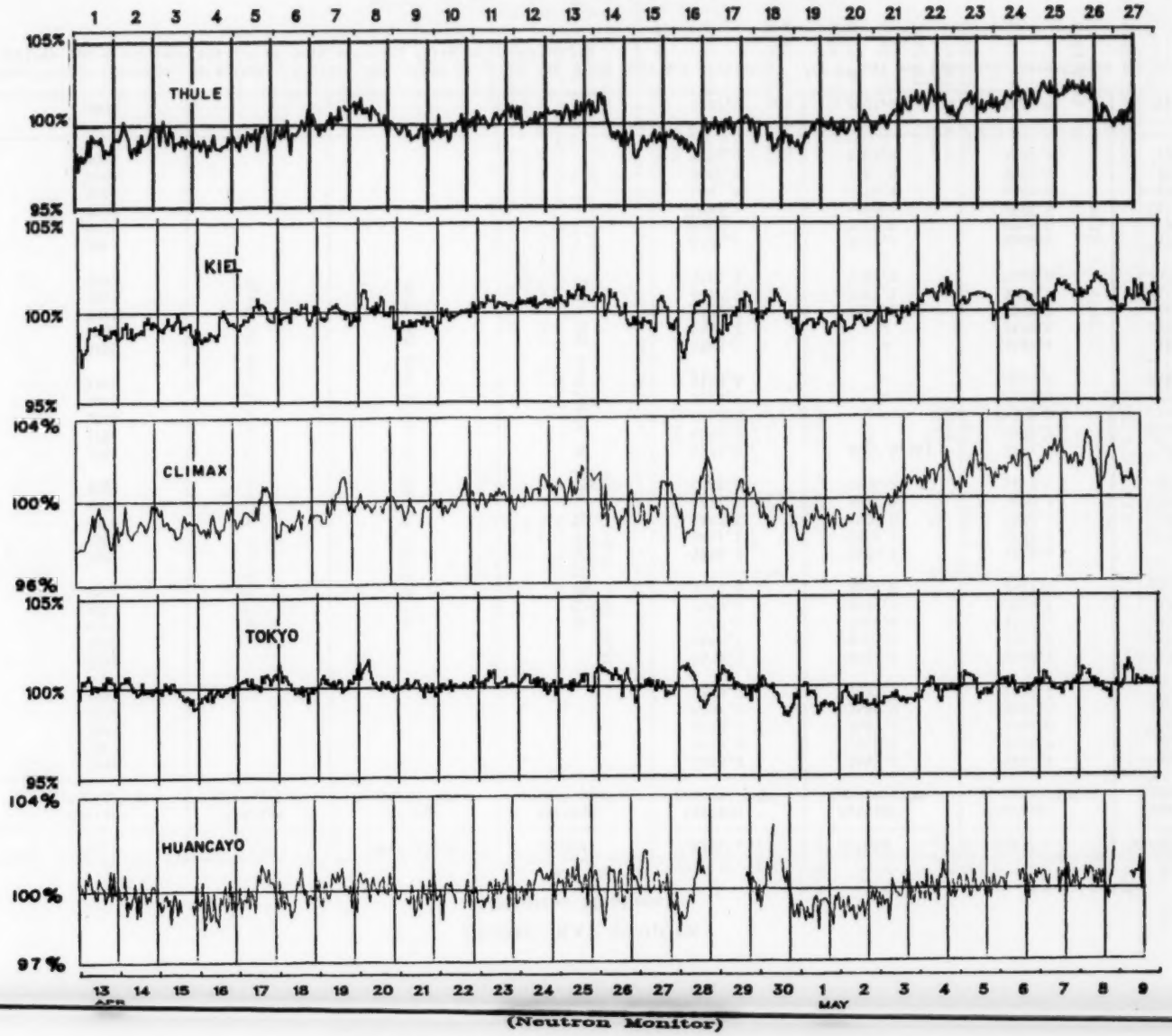
May 1981	THULE Average (cts/h)/100	ALERT Average (cts/h)/100	DEEP RIVER Average (cts/h)/300	CALGARY Average (cts/h)/100	KIEL Average (cts/h)/100	CLIMAX Average (cts/h)/100	TOKYO Average (cts/h)/100	HUANCAYO Average (cts/h)/100
1	3904				5466.0	3551.4	3481.4	1687.3
2	3927				5473.0	3555.5	3479.3	1687.0
3	3943				5500.2	3581.2	3482.0	1696.1
4	3988				5557.2	3626.0	3501.0	1703.0
5	3979				5539.0	3637.9	3508.6	1701.7
6	3983				5534.0	3643.3	3508.3	1705.3(38)
7	4002				5556.5	3662.0	3510.2	1708.3
8	4010				5572.6	3659.4	3512.3	1708.0
9	3953				5546.8	3639.8	3519.4	1709.9(30)
10	4004				5564.8	3654.8	3517.4	1711.7(26)
11	3887				5456.2	3578.5	3480.6	-
12	3882				5411.1	3553.1	3472.2	-
13	3876				5400.5	3528.0	3473.7	1675.0
14	3888				5412.7	3528.2	3470.2	1684.1
15	3855				5395.8	3506.2	3479.5	1682.8
16	3753				5273.2	3452.8(36)	3414.7	1660.1
17	3797				5295.9	-	3431.2	1670.8
18	3678				5064.8	-	3369.9	1627.0
19	3663				5106.5	-	3363.5	1635.2
20	3706				5160.6	-	3403.5	1646.8
21	3755				5265.7	-	3447.4	1670.0
22	3823				5362.2	-	3472.5	1686.8
23	3871				5402.4	3518.0(2)	3488.2	1694.0
24	3911				5477.7	3557.1	3487.7	1705.6
25	3947				5521.4	3595.3	3506.8	1701.8
26	3963				5531.1	3611.3	3509.8	1705.5
27	3975				5558.1	3619.5	3514.0	1709.3
28	4032				5588.1	3670.4	3515.9	1717.0
29	4046				5641.6	3718.4	3541.0	1723.2(38)
30	4050				5626.6	3720.9	3542.9	1721.3
31	4025				5601.0	3707.8	3524.1	1717.0
MEAN	3906				5447.2	3607.9	3481.6	1690.9

Data not available at time of publication.

For less than 24-hour coverage, parentheses enclose the number of hours for which data are available. For Climax and Huancayo, parentheses enclose the number of section hours whenever the sum of both sections falls below 40 hours.

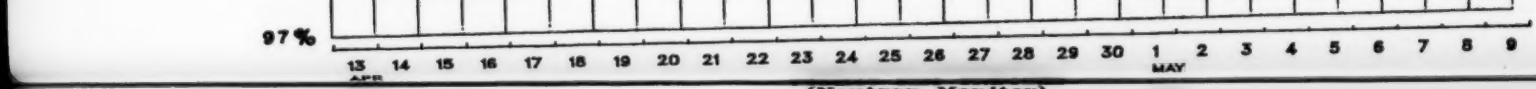
COSMIC RAY INDICES
(Neutron Monitor)

Bartels Rotation 2019 (April 1981–May 1981)



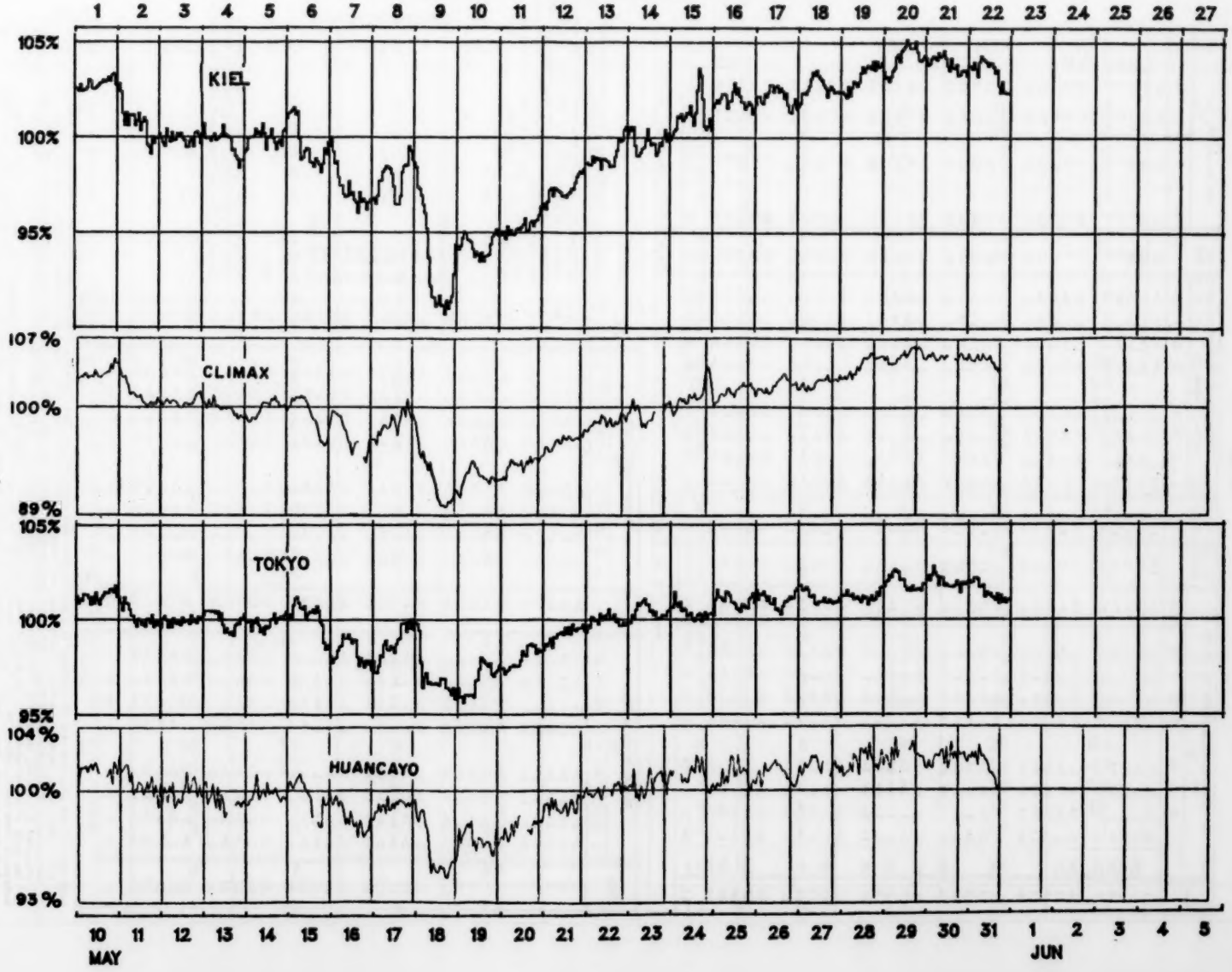
(Neutron Monitor)

Bartels Rotation 2020 (May 1981–June 1981)



(Neutron Monitor)

Bartels Rotation 2020 (May 1981–June 1981)



GEOMAGNETIC ACTIVITY INDICES

MAY 1981

Day	Q	Three-Hourly Indices Kp 1	2	3	4	5	6	7	8	Sum	Ap	Cp	Three-Hourly Indices Km 1	2	3	4	5	6	7	8	Am	aa N	S	M
1		2-	1+	4	3+	3	4-	4-	3-	23+	16	0.9	1+	1	4-	3	3-	3-	4-	2+	24	32	22	24 31
2	Q0A	3+	2	2	2-	1+	2-	1	1+	14+	7	0.4	3-	2-	2	1+	1+	1+	1-	1+	11	14	10	15 0 C
3	Q5	1+	1+	2+	2	2-	1	1-	1-	11	5	0.2	1+	1+	2+	2	2-	1+	1-	1-	10	9	10	12 7 CC
4	Q2	1-	1	2-	1+	1	1+	1	0+	8+	4	0.1	1-	0+	1+	1	1	1-	1	0+	5	8	3	5 7 CC
5	Q1	1	1-	1-	1-	2-	1	1+	1-	8-	4	0.1	1-	0	0+	0+	1+	1	1	1-	5	8	6	5 9 CC
6	Q4	1	1+	1	1	2-	2-	2-	1	10+	5	0.2	1	1+	1+	1	1+	1	1-	0+	7	10	7	7 10 CC
7	Q3	1	2-	1	2-	2-	1	1+	1-	10	5	0.2	1	1+	1+	1+	1+	1-	1-	0+	7	9	8	8 8 CC
8		1+	2-	1	2+	2	4-	4-	3	19-	11	0.6	1	1+	1+	2	2	3	3-	3-	17	27	15	9 33
9		4+	6+	6+	4+	3+	3+	3-	3	34-	39	1.4	4+	6-	6-	4+	3+	2+	2+	2+	61	50	51	79 22
10		4-	3+	3-	2-	2	4	4+	7	29-	32	1.3	3+	3	3-	2	2-	3+	4-	6	43	41	31	19 53
11	D2	7-	7-	6	6	5+	3+	3-	3+	40	61	1.7	6-	6-	5+	5-	4+	2	2+	3-	73	69	72	104 37
12		2-	2+	2+	1+	3	4-	4-	3+	21+	13	0.8	2-	3-	2	1	3-	3	3	3-	21	28	16	11 33
13		3+	4	3	1+	2-	1-	1-	1	16-	10	0.6	3	3+	3-	1	1+	1-	1-	1-	15	22	12	27 8
14		2-	3-	3	4+	4-	3-	4	3	25	18	1.0	2-	3-	3-	4-	3+	2+	3+	3-	28	28	33	30 32
15	D4	4	7	6+	4+	4+	5-	5-	5-	40	54	1.6	4-	6	6	4	4	4	4	4	81	64	73	84 54
16	D1	5-	5	6-	6+	6-	6	5+	3+	42	59	1.7	5-	4+	5	6	5	5	4	3	84	71	97	92 77
17		3-	2	1+	2-	2-	2	2	5+	19-	13	0.8	3-	2+	3-	2+	2	2+	3-	5+	31	24	16	9 31
18	D3	5	7	7-	5	4+	4+	5-	3-	40-	57	1.7	5-	6+	6	5-	4-	4+	3+	3-	85	57	65	91 31
19		2	3	4+	4-	3	4-	3	3	26-	18	1.0	2+	3-	4	3	3+	3	3-	3-	30	33	31	32 32
20	D5	4+	5-	6+	3+	4	5-	6	3+	37-	43	1.5	4-	4	6-	3	4-	4	5-	3+	59	57	46	50 53
21		2+	2-	2	3-	2	2	3+	4	20	12	0.7	2+	2	3-	3-	2	1+	3-	4-	22	17	18	13 21
22	Q8	2	2	2	1+	2-	2-	2	1+	14	6	0.3	2	2	2-	1+	1+	2-	2-	1	11	13	7	9 11 C
23		1	2+	4+	4-	4	3+	4	3-	25+	19	1.0	1+	2+	4-	3+	3	3-	3	3-	28	34	31	32 33
24		3+	2+	3	3+	3	4	3+	4	26+	18	1.0	4-	3-	3	3	3	3	4-	4-	34	31	26	21 36
25		3+	5-	4+	5-	4-	4-	5+	5-	34+	33	1.3	3	4	4-	4-	3+	3	4	4	43	60	37	43 54
26		4-	2	1+	1	1	2-	2-	2	14+	8	0.4	3+	2+	2	1+	1	2-	1	2	15	16	9	11 13 C
27	Q6	1	2-	1-	1+	1-	1	3-	2+	11+	6	0.3	1	2	1	2-	1-	1	2	2	11	11	8	9 10 C
28		3-	4+	2	2	3+	2+	1+	2	20	12	0.7	3-	4	2	2	3-	2-	1	2+	21	23	18	27 14
29	Q7	2	2+	1+	1	2-	1	2-	1+	12+	6	0.3	2	2+	2-	1	2-	0+	1+	1+	10	14	9	13 9 CC
30	Q9	1+	2-	1	2-	2	2+	2-	2+	14	6	0.3	1+	1+	1+	2-	2-	2-	1+	2	11	16	8	9 15 CC
31		2+	2	2	3-	2	2+	2-	2-	17-	8	0.4	2	2	2+	3-	2	2-	2-	1+	15	19	13	17 14
									Mean		20	0.79									29.6	29.5	26.1	27.8

Day	Three-Hourly Indices Kn 1	2	3	4	5	6	7	8	An	Three-Hourly Indices Ks 1	2	3	4	5	6	7	8	As
1	1+	1	4-	3+	3	3	4-	3-	28	1	1+	4-	2+	3-	2-	3+	2+	21
2	3-	2-	2	1+	1+	2-	1+	1+	12	3-	2-	2-	1+	1+	1+	0+	1	11
3	2-	1+	2+	2+	2-	2-	1	1	11	1+	1+	2+	2-	2-	1-	0+	1-	9
4	1-	0+	2-	1+	1+	1	1+	0+	7	1-	0+	1	0+	1-	1-	0+	0	4
5	0+	0	1-	1-	2-	1	1+	1	6	1-	0+	0	0+	1+	1-	1-	0+	4
6	1+	1	1	1+	1+	1+	1+	1	8	1	1+	1+	1-	1	0	0	0	5
7	1+	2-	1+	2-	2-	1	1+	1	10	1-	1+	1+	1	1-	0	0	0	5
8	1+	2-	1+	2+	2+	3+	3	3	21	1	1+	1	1+	1+	3-	2+	2	12
9	4+	6	6-	4+	4-	3-	3-	3-	68	4+	5+	6-	4	3	2	2-	2	55
10	3+	3+	3-	2+	2+	3+	4	6	49	3	3-	3-	1+	1	3	3	6-	37
11	6	6-	5+	5	5-	2+	3-	3	80	6-	6-	5	4+	4-	2	2	3-	67
12	2-	2+	2	1+	3	3	3	3-	21	2	3-	2	1	2	3+	3	3	21
13	3+	4-	3	1+	2	1	1+	1	19	2+	3	3-	1-	0	0+	0+	0+	11
14	2	3-	3-	4-	3+	3-	4-	3	32	2-	2+	3	4-	3	2+	3-	3-	25
15	4-	6+	6+	4+	4	4-	4	4-	87	4-	6	5	4-	4+	4	4+	4+	75
16	5-	5-	5+	6	5	5-	4	3-	86	4+	4	5-	6	5	5+	4	3	82
17	3-	3-	3+	3	2	3	3+	6-	42	2+	2	1	1+	2	1+	2-	5-	20
18	5-	6+	7-	5	4	4+	4-	3	95	5-	6	6-	5-	4-	4+	3	2+	75
19	2+	3-	4	3	3+	3+	3-	3	30	2	3-	4-	3+	3+	3	2+	3-	29
20	4-	4	6	3	4-	4	5-	3	61	4-	4	5+	3	4-	4+	5-	4-	57
21	2+	2-	3-	3	2+	2	3	4-	23	2+	2+	3-	3-	2-	1-	3-	3+	21
22	2	3	2	1+	2-	2-	2-	1+	12	2	2	2-	1	1-	1+	1+	1-	10
23	1+	3-	4-	3+	3+	3-	3	3-	30	1-	2	4-	3+	3-	2+	3	3-	26
24	3+	2+	3-	3-	3	3+	3	4-	31	4-	3-	3+	3	3	3	4	4-	37
25	3	4	4-	4	4-	3	4	4	46	3	4	4-	3	3	3-	4-	4	39
26	3+	2	2-	2-	1	2	2-	2+	15	3+	3-	2+	1	1	1+	0+	2-	14
27	1	2+	1+	2+	1+	1+	3-	2+	14	1+	2	1-	1+	0	0+	1+	2-	7
28	3-	4-	2	2+	3+	2	1+	3-	24	3-	4	2-	2-	2	1	1-	2-	18
29	2+	2+	2	1+	2-	1-	2-	2-	13	2-	2	2-	0+	1+	0	1-	1-	7
30	1+	2-	1+	2	2+	2+	2	2+	14	1	1-	1+	1+	1+	1	0+	2-	7
31	2+	2	3-	3	2	2+	2-	2	19	2	2-	2	2	2-	1+	2-	1-	12
								Mean	32.7									26.5

ERRATA:

Conversion in 1979 to a new computer with a different word size caused values of indices aa to be truncated if they exceeded 99; the machine read and printed only the two least significant digits. Correct values of the affected indices are listed below. Both half-daily values are given, too, to make clear which of the two entries should be corrected.

Date	N	S	M
21 Feb 1979			66 102
10 Mar			54 101
25 Apr	109		27 148
26 Apr			103 15
13 Aug			53 108
20 Aug			33 100
29 Aug			59 111
18 Sep			100 63
25 Jul 1980			13 100
19 Dec	118	123	63 178
06 Feb 1981			24 116

NOTE:

aa indices are provisional from 1 January 1981 until further notice, in connection with the change of the Southern Hemisphere observatory.

Quiet days (Q) and disturbed days (D), geomagnetic planetary three-hour-range indices (Kp) (integers alone are equivalent to those normally given with a small zero), magnetic character figures (Cp), and average amplitude (Ap) (unit 2 nT) prepared by Geophysikalisches Institut at the University of Göttingen, F.R. of Germany for the International Service of Geomagnetic Indices. Ten most quiet days [Q1-Q0(10)] and five most disturbed days [D1-D5] are ordered from most quiet or disturbed, respectively. A or K means "not really quiet" (A = "Ap>6", K = "Ap≤6 but one Kp≥3-"). An asterisk means "not really disturbed" (Ap<20).

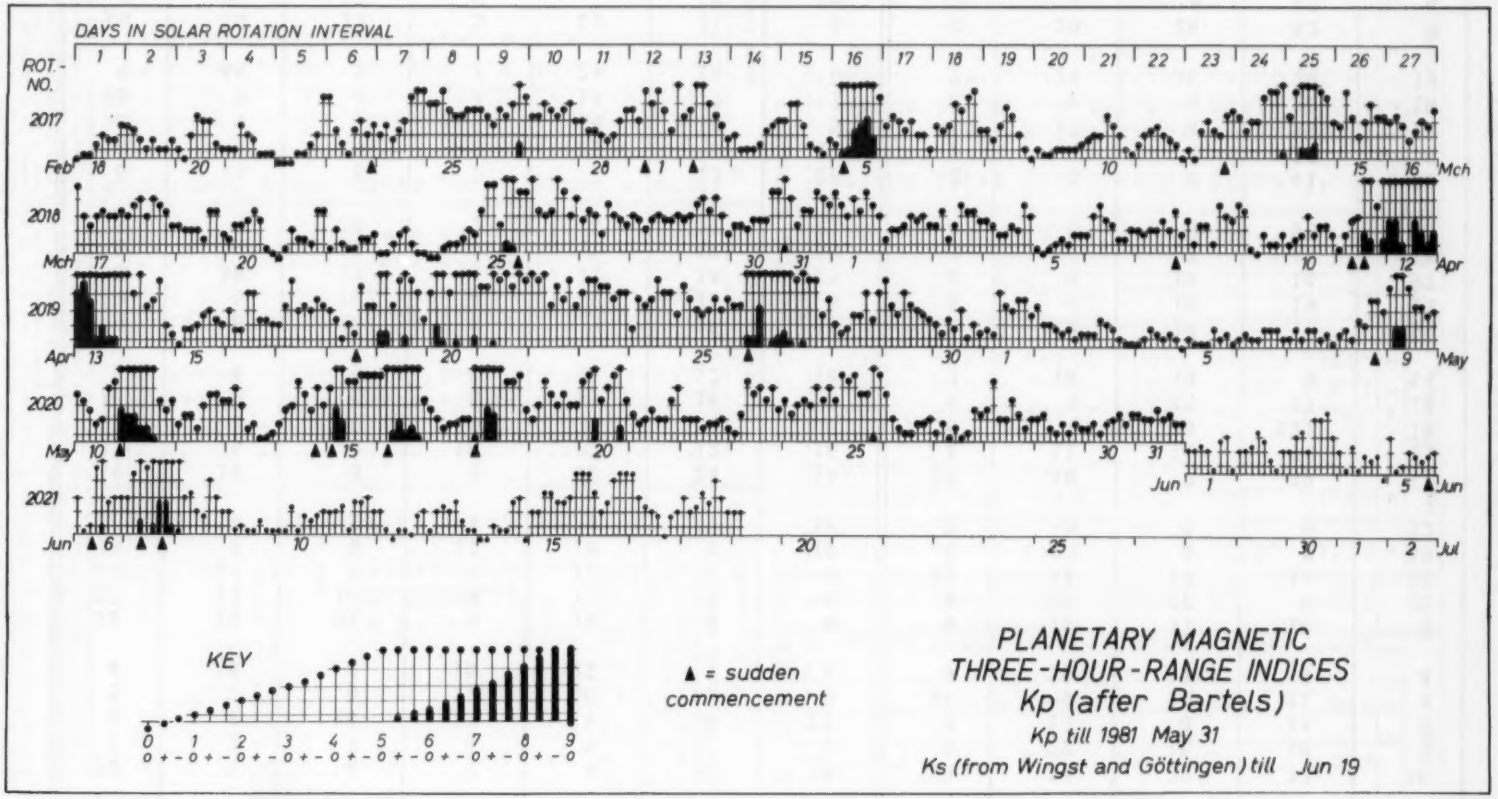
Geomagnetic three-hourly indices Km, Kn, Ks, daily mean values Am, An, As (unit 1nT), and indices aa are prepared by M.-Menvielle of the Institut de Physique du Globe, Paris, France. For aa indices daily north (N) and south (S) values, and half-daily antipodal mean (M) values are given. Quiet 24-hour and 48-hour intervals centered on 1200 UT are indicated for really quiet as C and for quiet but with some slightly disturbed three-hour intervals as K. The first hundred years series of aa is in IAGA Bulletin No.33, and complementary data are in IAGA Bulletin No.39.

DAILY AVERAGE INDICES Ap

DAILY AVERAGE INDICES Ap

DAY	1980 JUN	JUL	AUG	SEP	OCT	NOV	DEC	1981 JAN	FEB	MAR	APR	MAY
1	22	5	4	7	2	16	19	13	14	28	23	16
2	7	3	7	4	5	11	7	9	22	25	10	7
3	9	4	20	12	5	5	21	9	13	8	14	5
4	5	7	8	12	26	12	8	14	9	12	11	4
5	4	15	4	10	22	5	4	9	25	81	4	4
6	16	10	21	9	14	6	4	9	48	11	10	5
7	27	13	10	10	12	6	6	6	20	20	9	5
8	23	14	4	8	12	6	9	11	14	10	11	11
9	14	8	9	12	16	9	10	6	22	4	8	39
10	33	4	9	4	22	14	10	9	3	8	8	32
11	59	10	8	6	40	24	16	19	10	7	39	61
12	32	5	8	18	11	12	16	4	11	11	96	13
13	27	9	6	16	5	6	6	6	7	28	121	10
14	10	9	6	8	11	10	8	6	3	45	27	18
15	5	6	5	8	15	22	10	7	10	19	8	54
16	9	6	26	8	3	16	16	12	10	14	13	59
17	3	6	10	14	5	11	5	8	6	18	19	13
18	3	30	18	4	21	16	15	4	6	19	14	57
19	8	16	28	6	11	17	79	3	6	10	45	18
20	6	9	10	7	4	17	21	4	9	9	53	43
21	6	14	8	2	7	13	26	2	5	8	41	12
22	6	5	10	8	23	8	11	9	6	4	33	6
23	6	4	5	5	44	10	5	8	12	4	31	19
24	13	7	4	4	14	12	3	8	20	4	22	18
25	8	46	5	7	24	16	8	7	24	36	19	33
26	15	26	12	5	13	21	6	8	29	28	62	8
27	3	15	22	6	3	19	10	8	21	14	43	6
28	3	14	4	6	2	23	4	16	11	12	13	12
29	5	6	4	9	3	16	9	15		18	19	6
30	8	8	6	5	10	24	13	7		16	7	6
31		6	7		30		15	22		26		8
MEAN	13	11	10	8	14	13	13	9	14	18	23	20

GEOMAGNETIC ACTIVITY INDICES



PRINCIPAL MAGNETIC STORMS

MAY 1981

OBS. 3 letter code	GEOMAG-NETIC LATI-TUDE	COMMENCEMENT DAY	COMMENCEMENT hr min (UT)	TYPE	SC – AMPLITUDES D(')	SC – AMPLITUDES H(γ)	SC – AMPLITUDES Z(γ)	MAXIMUM 3 HOUR – INDEX K DAY (3 HOUR PERIOD)	K	RANGES D(')	RANGES H(γ)	RANGES Z(γ)	UT END DAY	UT END HOUR
HYB	07.6N	01	0746	SC	- .8	28	- 3	01(3)	4	6	106	32	02	14
SIT	60.0N	08	23--	..	..	..	..	09(3)	7	--	--	440	09	16
NEW	55.1N	08	2127	..	..	..	..	09(2,3)	7	49	508	578	10	10
WIT	54.2N	08	1754	SC	- 2	40	..	09(3)	6	25	100	75	09	16
FRD	49.6N	08	17--	..	..	..	..	09(2)	6	27	106	123	--	--
HON	21.1N	08	1754	SC	..	11	3	09(2)	6	10	257	39	10	07
JAI	17.3N	08	1700	..	..	..	..		-	10	141	63	09	21
SHL	14.7N	08	1700	..	..	..	..		-	9	173	74	09	21
UJJ	13.5N	08	1700	..	..	..	..		-	9	134	59	09	21
ABG	09.5N	08	1700	..	..	..	..	09(2,3)	6	7	129	61	09	21
HYB	07.6N	08	1300	..	..	..	..	09(2,3)	6	7	155	41	10	03
ANN	01.5N	08	1700	..	..	..	..		-	8	293	99	09	21
HUA	00.6S	08	1442	..	..	..	..	09(1,2)	5	9	375	46	09	23
TRD	01.1S	08	1700	..	..	..	..		-	3	328	181	09	21
COL	64.6N	09	00--	..	..	..	..	09(3) 10(6) 11(1,2,3)	6	231	1330	150	11	21
GUA	04.0N	09	0001	..	..	..	..	09(2)	7	10	330	30	09	16
PMG	18.6S	09	00--	..	..	..	..	09(2)	6	8	250	100	09	16
HER	33.7S	09	0000	..	..	..	..	09(3)	5	24	133	49	09	12
SIT	60.0N	10	2209	SC	9	62	- 7	11(4)	8	--	1210	410	11	21
NEW	55.1N	10	2207	SC	11	126	6	11(2)	7	64	464	474	12	02
WIT	54.2N	10	2208	SC	- 3	116	..	10(8) 11(1,2)	6	30	215	130	11	16
FRD	49.6N	10	2208	SC	4	97	- 6	10(8)	6	28	284	158	12	--
HON	21.1N	10	2209	SC	1	42	13	10(8) 11(1,2,3)	5	7	192	52	11	19
JAI	17.3N	10	2208	SC	- .7	47	- 6		-	12	144	35	11	10
SHL	14.7N	10	2208	SC	1.2	40	7		-	9	172	36	11	18
UJJ	13.5N	10	2208	SC	- .2	54	- 8		-	9	146	33	11	10
ABG	09.5N	10	2208	SC	- .4	40	5	11(3)	6	10	131	43	11	10
HYB	07.6N	10	2209	SC	.5	41	- 2	11(3,4)	6	8	147	26	12	01
GUA	04.0N	10	2208	SC	4	50	-20	10(8)	6	10	150	40	11	15
ANN	01.5N	10	2208	SC	- .3	34	19		-	11	--	71	11	10
HUA	00.6S	10	2207	SC	2	50	12	11(2)	5	7	312	45	11	21
TRD	01.1S	10	2208	SC	..	28	49		-	7	--	--	11	10
PMG	10.6S	10	2208	SC	2.6	39	40	11(4,5)	6	7	140	80	11	15
HER	33.7S	10	2100	..	..	..	..	11(4)	6	23	124	89	11	15
GNA	43.2S	10	2208	SC	2.2	7	9	10(8) 11(1)	6	10	120	140	11	15
COL	64.6N	14	09--	..	..	..	..	15(2)	7	265	1450	070	17	05
SIT	60.0N	14	05--	..	..	..	..	16(5)	7	--	--	690	17	04
NEW	55.1N	14	2222	SC	1	13	..	15(3) 16(4)	8	96	900	552	17	07
FRD	49.6N	14	10--	..	..	..	..	15(2,3) 16(4)	6	42	200	196	17	--
HON	21.1N	14	1857	SC	1	17	6	17(2)	7	9	165	47	15	17
JAI	17.3N	14	1857	SC	- .7	25	- 5		-	9	122	57	16	02
SHL	14.7N	14	1857	SC	.1	24	5		-	9	100	83	16	02
UJJ	13.5N	14	1857	SC	- .4	27	- 5		-	9	143	61	16	02
ABG	09.5N	14	1857	SC	- .6	21	- 4	15(3)	6	7	162	74	16	02
HYB	07.6N	14	1857	SC	- .2	21	- 1	15(2)	7	8	191	60	16	03
ANN	01.5N	14	1857	SC	- .7	22	13		-	9	200	103	16	02
HUA	00.6S	14	1857	SC	1	70	7	15(2)	6	12	294	51	15	22
TRD	01.1S	14	1857	SC	.1	15	22		-	6	--	--	16	02
PMG	10.6S	14	1858	SC	.4	10	11	15(2) 16(4)	6	7	210	100	16	20
WIT	54.2N	15	0252	SC*	- 4 *	27	..	15(2,3) 16(6)	6	34	215	135	16	23
GUA	04.0N	15	0204	..	..	..	..	15(2)	7	--	260	40	15	17
HER	33.7S	15	0252	SC	3	12	12	15(2,3) 16(4)	5	30	174	100	16	23
GNA	43.2S	15	0251	SC*	- 4.2*	17	*-11	* 16(4)	7	25	150	210	17	00
HON	21.1N	16	0532	SC	..	17	6	16(4)	5	4	56	23	16	19
JAI	17.3N	16	0533	SC	- .9	22	- 7		-	8	154	64	16	23
SHL	14.7N	16	0533	SC	- .5	22	5		-	8	212	61	16	23
UJJ	13.5N	16	0533	SC	- .7	26	- 8		-	7	179	61	16	23
ABG	09.5N	16	0533	SC	--	--	--		-	--	--	--	16	23
HYB	07.6N	16	0532	SC	- .7	26	- 5	16(4,5,6)	6	7	228	41	16	23
GUA	04.0N	16	0532	SC	..	20	- 5	16(4)	6	--	150	40	16	20
ANN	01.5N	16	0533	SC	- 2.1	82	16		-	7	312	81	16	23
HUA	00.6S	16	0531	SC	1	13	5	16(6)	7	7	200	48	16	21
TRD	01.1S	16	0533	SC	- .1	71	02		-	5	329	102	16	23
COL	64.6N	17	2302	SC*	55	-332	..	20(3)	7	246	1330	020	21	03
SIT	60.0N	17	2304	SC*	- 6	*-110	*-30	20(3)	8	--	910	530	21	03
NEW	55.1N	17	2302	SC*	2	52	3	10(2,3)	7	72	402	441	22	04
WIT	54.2N	17	2302	SC	- 2	100	..	10(2)	7	30	270	145	10	21
FRD	49.6N	17	2302	SC*	- 2	25	- 5	10(2,3) 20(3,7)	6	32	209	205	--	--
HON	21.1N	17	2303	SC	..	11	5	10(2)	7	15	215	50	10	19
JAI	17.3N	17	2301	SC	- 1.7	57	-12		-	10	154	55	10	20
SHL	14.7N	17	2301	SC	- .4	46	9		-	10	169	73	10	20
UJJ	13.5N	17	2301	SC	- .9	63	-13		-	9	156	43	10	20
ABG	09.5N	17	2301	SC	- 1.3	40	- 9	10(2)	6	8	143	57	10	20
HYB	07.6N	17	2301	SC	- .6	50	- 1	10(2,3)	6	7	103	40	19	19
GUA	04.0N	17	2302	SC	1	30	- 8	10(2)	6	10	230	40	10	21
ANN	01.5N	17	2301	SC	- 1.9	57	32		-	8	247	111	10	20
HUA	00.6S	17	2301	SC	1	43	7	10(3)	6	12	272	42	10	21
TRD	01.1S	17	2301	SC	.1	44	59		-	6	--	--	10	20
PMG	10.6S	17	2302	SC	1.0	30	10(2)		6	8	210	90	19	00
HER	33.7S	17	2302	SC	3	30	19	10(2)	6	30	130	97	10	21
GNA	43.2S	17	2302	SC	0.3	29	44	10(2)	6	22	150	130	10	21
HYB	07.6N	20	0519	SC	- .1	10	- 2	20(3)	5	7	143	34	21	02
PMG	10.6S	20	0510	SC	.4	0	0	20(3)	5	4	90	50	21	00
COL	64.6N	23	03--	..	..	..	..	23(3,4)	6	159	1170	590	26	06
NEW	55.1N	23	03--	..	..	..	..	25(4,0)	5	24	153	102	26	10
HYB	07.6N	23	0300	..	..	..	..	24(0) 25(4,5,6)	4	0	141	33	26	02

Reports were received from the following observatories:

Alibag Annamalainagar College Fredericksburg Gnangara Guam Hermanus Honolulu Huancayo
Hyderabad Jaipur Newport Port Moresby Shillong Sitka Trivandrum Ujjain Witteveen

MAY 1981

PRELIMINARY REPORT ON RAPID MAGNETIC VARIATIONS

The meaning of the station symbols is given in the IAGA-Bulletin nr. 32h, page 106-116.
Times of ssc are mean values.

Sudden commencements followed by a magnetic storm or a period of storminess (ssc)

01 0745 A: VIC MPO; B: AQU TOL (bs: A: HUA)

08 1754 A: COI; B: DOU MMB TOL HTY KNY; C: WNG NGK KGL (bp: B: MPO)

10 2208 A: WNG DOU VIC AQU EBR COI FRD PMG HUA MPO; B: NGK HAD MMB TOL KAK KNY KGL? DUM; C: HTY (bp: A: CZT)

14 1856 A: DOU COI HUA; B: WNG HAD AQU EBR TOL KAK HTY PMG MPO; C: NGK KNY

15 0252 A: MPO; B: WNG DOU MMB AQU CZT KGL DUM; C: EBR

16 0532 A: MPO; B: WNG MMB EBR TOL KAK HTY HUA CZT KGL DUM; C: HAD KNY

17 2302 A: WNG NGK DOU VIC AQU EBR COI TOL FRD PMG HUA MPO CZT KGL DUM; B: MMB KAK HTY; C: HAD KNY

20 0519 A: COI; B: PMG HUA MPO; C: MMB KAK HTY KNY HUA CZT KGL DUM

Solar-flare effects (sfe)

Effects confirmed by ionospheric or solar observations are underlined.

04 0837 - 0922 SOD WNG NGK MMB AQU EBR TOL KAK HTY KNY MPO (ssc: A: COI)

05 1407 - 1500 WNG NGK HAD DOU AQU EBR TOL MPO (ssc: A: HUA)

05 2255 - 2330 MMB

07 1242 - 1256 SOD

11 0545 - 0553 HTY

12 1422 - 1455 NGK

22 0621 - 0655 MMB KAK HTY KNY

25 1005 - 1135 NGK (bp: C: MPO)

27 0924 - 0940 SOD WNG NGK (si: A: MPO)

RADIO PROPAGATION QUALITY INDICES

MAY 1981

DAY	TOKYO	NEW YORK	TEHERAN	OSLO	BRACKNELL
1	6.2	6.7	6.3	7.0	6.3
2	6.6	6.3	7.1	7.1	6.8
3	6.4	6.5	7.3	7.3	6.7
4	6.3	7.0	6.8	8.0	6.2
5	6.4	6.9	6.6	7.2	6.1
6	6.1	7.1	6.6	8.2	7.1
7	6.0	6.7	6.1	8.1	7.1
8	6.1	6.8	7.3	9.3	7.9
9	4.7	4.9	5.4	4.3	3.9
10	4.5	5.1	4.1	4.8	3.8
11	4.3	4.3	5.0	4.2	3.6
12	5.4	5.0	3.7	5.8	6.1
13	5.2	4.5	4.3	4.6	3.8
14	5.8	5.3	5.1	5.5	5.3
15	4.8	3.7	3.9	3.6	3.9
16	5.0	3.9	3.4	3.8	3.9
17	5.6	5.6	6.6	6.5	7.4
18	4.9	5.1	4.6	2.9	3.6
19	5.2	5.4	5.6	4.5	4.3
20	5.2	5.3	5.2	4.6	5.1
21	5.1	5.9	5.3	5.8	5.4
22	6.1	6.2	6.8	6.4	6.3
23	5.5	5.8	4.8	4.9	6.1
24	4.6	5.5	4.8	3.4	3.7
25	4.5	4.8	3.9	3.4	3.8
26	5.5	5.7	5.5	6.6	6.0
27	5.8	6.7	5.9	6.9	7.2
28	5.9	6.5	5.3	5.1	6.1
29	6.4	6.4	6.7	5.7	6.8
30	6.2	6.5	5.6	6.1	6.6
31	6.3	6.6	5.3	5.5	6.0
MEAN	5.6	5.8	5.5	5.7	5.6

CALCULATION OF QUALITY INDICES (Q)

From all 24 hourly field strength values and from all frequencies of the same circuit a median field strength value is calculated (FD). This daily value is compared with the average value (FA) of the preceeding 27 days (1 sun rotation).

$$Q = 6.0 + 20 \log(FD/FA)/3.0$$

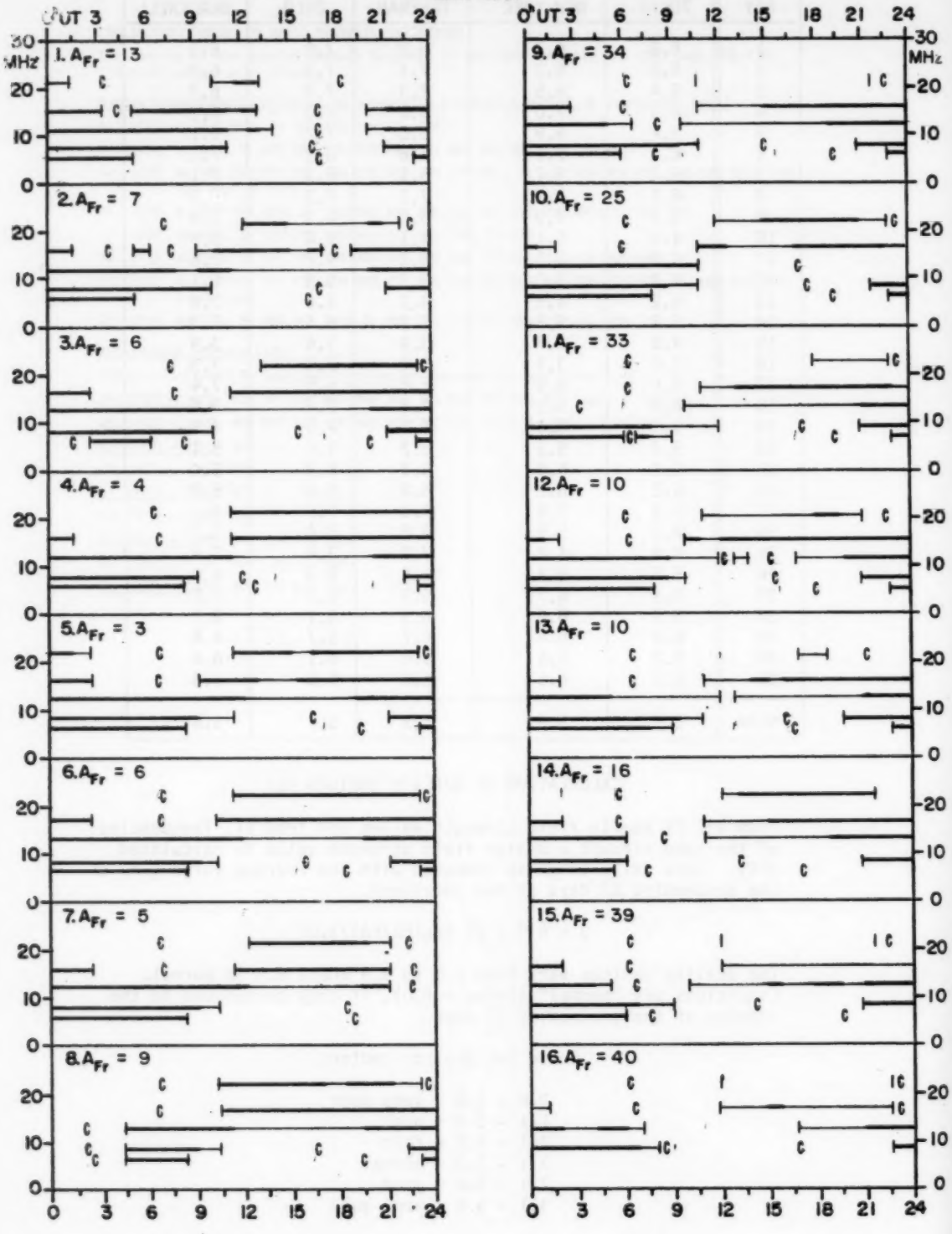
The quality indices vary from 0.0 to 9.9 where 6.0 is normal. Conditions are "normal" (index = 6.0), if they correspond to the average of the preceeding 27 days.

Scale for Quality Indices

0.0 - 1.0 = very poor
1.1 - 3.0 = poor
3.1 - 5.0 = fair
5.1 - 7.0 - normal
7.1 - 9.0 = good
9.1 - 9.9 = very good

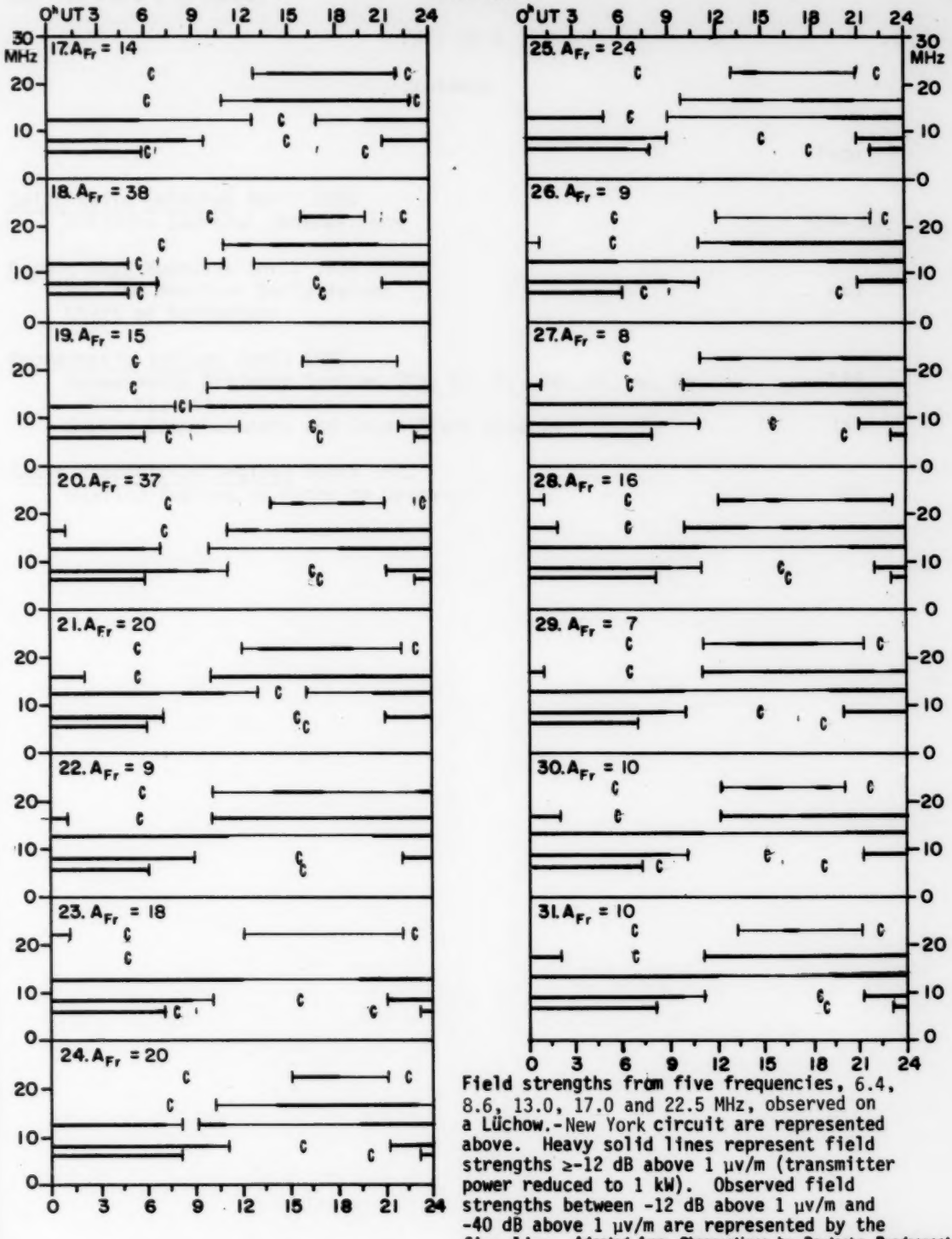
TRANSMISSION FREQUENCY RANGES -- NORTH ATLANTIC PATH

MAY 1981



TRANSMISSION FREQUENCY RANGES -- NORTH ATLANTIC PATH

MAY 1981



Field strengths from five frequencies, 6.4, 8.6, 13.0, 17.0 and 22.5 MHz, observed on a Lüchow.-New York circuit are represented above. Heavy solid lines represent field strengths ≥-12 dB above 1 μv/m (transmitter power reduced to 1 kW). Observed field strengths between -12 dB above 1 μv/m and -40 dB above 1 μv/m are represented by the fine line. Adapted from Observations by Deutsche Bundespost

SGD 443 Part I (Prompt)

LATE DATA

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SOLAR RADIO EMISSION
SPECTRAL OBSERVATIONS

APRIL 1981

DAY	TIMES OF OBSERVATION START UT	TIMES OF OBSERVATION END UT	STATION	EVENTS: DECIMETRIC BAND START UT	DECIMETRIC BAND END UT	DECIMETRIC BAND INT	METRIC BAND START UT	METRIC BAND END UT	METRIC BAND INT	DEKAMETRIC BAND START UT	DEKAMETRIC BAND END UT	DEKAMETRIC BAND INT	SPECTRAL TYPE
01	0000	0736	CULG	0023.5	0115	1							N,DCIM
			CULG				0108.5	0109.5	1				IIIG
			CULG							0115	0320	1	SWF
			CULG	0119	0230	2							IV
			CULG				0132.5	0137.5	2				IIIGG
			CULG				0133	0322.5	2				IV STRUCT
			CULG				0137.5	0157.5	2				II HB
			CULG				0334.5	0541					IIIN,W
			CULG				0337.5		1				IIIB
			CULG				0423	0424	1				IIIG
			CULG				0552.5		1				IIIB
			CULG				0709.5	0710.5	1				IIIG
	2036	2400	CULG				2053.5		1				IIIB,U
			CULG	2253.5	2254	1							DCIM
			CULG				2333						IIIB,W
02	0000	0735	CULG				0230.5	0346					IIIN,W
			CULG				0252.5	0338.5	1				IIIS
			CULG				0341	0344	1				IIIG,RS
			CULG				0509.5	0548	1				IIIS
			CULG				0509.5	0548	1				IN
			CULG	0528.5	0604	1	0540	0548	1				CONT
			CULG	0537	0538.5	1							DCIM
			CULG				0603.5						IIIB,W,U
			CULG				0605.5	0606	1				IIIG,U
			CULG	0605.5	0606	1							DCIM
	2036	2400	CULG	2132.5	2137.5	2	2132.5	2137.5	3				IIIGG
			CULG				2142	2158	1				II
			CULG	2204	2204.5	1							IIIG
			CULG	2321.5	2322.5	1							DCIM
03	0000	0620	CULG	0023	0615	1							IIIN
			CULG				0028	0615					IIIN,W
			CULG	0037	0038.5								UNCLF
			CULG				0119		1				IIIB
			CULG	0126	0127.5	2	0126	0129	2				IIIG,V
			CULG	0129.5	0130	2							IIIG
			CULG				0132.5	0147.5	3				II HB
			CULG	0205	0210								DCIM,N,W
			CULG							0209	0231		SWF,W
			CULG	0318	0318.5	1	0318	0318.5	1				IIIG,U
			CULG	0435.5	0436	3							DCIM
			CULG				0554	0555	1				IIIG
	2036	2400	CULG				2036	2038.5	1				II
			CULG				2039	2045					IIIN,W
			CULG	2041	2047	1							IIIN
			CULG				2043	2044	1				IIIG
			CULG				2150.5		1				IIIB
			CULG	2203.5									IIIB,W
			CULG	2315	2331	1							IN
			CULG				2323	2351					IIIS,W
			CULG				2326	2400					IS,W
			CULG							2335	2400		SWF,W
04			CULG				0000	0735					IS,W
			CULG	0000	0100								IN,W
			CULG				0000	0602					IIIN,W
	0000	0735	CULG							0000	0100		SWF,W
			CULG				0015	0016	1				IIIG
			CULG	0017.5	0018	2							IIIG
			CULG	0224	0226	2	0224	0226	1				IIIGG
			CULG	0230.5	0232.5	1	0231.5		2				IIIGG
			CULG				0240		1				IIIB
			CULG				0343.5	0344	2				IIIB,U
			CULG	0501	0506	3	0501.5	0505.5	3	0502.5	0503	1	IIIGG,V
			CULG	0503	0505	3	0503	0537	3				II HB
			CULG				0506	0509		0503	0510	2	SWF
			CULG				0509	0601	1				IIIN
			CULG				2035	2207					IIIN,W
	2035	2400	CULG				2035	2400					IS,W

SOLAR RADIO EMISSION
SPECTRAL OBSERVATIONS

APRIL 1981

DAY	TIMES OF OBSERVATION START UT	TIMES OF OBSERVATION END UT	STATION	EVENTS: DECIMETRIC BAND START UT	DECIMETRIC BAND END UT	DECIMETRIC BAND INT	METRIC BAND START UT	METRIC BAND END UT	METRIC BAND INT	DEKAMETRIC BAND START UT	DEKAMETRIC BAND END UT	DEKAMETRIC BAND INT	SPECTRAL TYPE
04			CULG				2037	2202	1				IIIN
			CULG				2123		2				IIIB
			CULG				2159.5		2				IIIB,V
			CULG				2207	2233	2				IIIS
			CULG				2233	2400					IIIN,W
			CULG	2259	2303								IIIGG,W
			CULG	2311	2315.5		2312.5	2315	2				IIIGG,V
05			CULG				0000	0033	1				IIIS
	0000	0735	CULG				0000	0100	1				IS,C
			CULG				0033	0125					IIIS,W
			CULG				0100	0140					IS,W,C
			CULG				0117.5		1				IIIB
			CULG				0125	0530					IIIN,W
			CULG	0139.5		2	0139	0139.5	1				IIIG
			CULG				0140	0553					IS,W
			CULG	0209	0217	1							CONT
			CULG	0216	0217								IIIG,W
			CULG	0256	0256.5	2	0256	0257	3				IIIG,V
			CULG				0723.5		1				IIIB
			CULG				0732	0735					IIIGG,W
			CULG				0734		2				IIIB
	2035	2400	CULG				2138	2255					IIIS,W
			CULG	2139	2155	1							CONT
			CULG	2144	2145	2	2144	2205.5	2			II	
			CULG	2145	2149	2						IV	P
			CULG				2150	2310				IV	W
			CULG				2150	2400					IS,W
			CULG				2255	2400					IIIN,W
			CULG	2359	2400								IIIG,W
06	0000	0735	CULG	0000	0001								IIIG,W
			CULG				0000	0535					IS,W
			CULG	0149	0151								IIIN,W
			CULG				0217	0400					IIIN,W
			CULG				0240	0252	1				DC,N
			CULG				0344.5		1				IIIB
			CULG				0352	0358.5	1			II	HB
			CULG	0553.5	0554	1							IIIG
	2035	2400	CULG				2040	2245					IIIN,W
			CULG				2152	2244	1				IIIN
			CULG				2226	2234.5					DC,W
			CULG				2241.5		2				IIIB
			CULG				2242.5		2				IIIB
			CULG				2246.5		2				IIIB
			CULG	2321	2321.5	1							IIIG
			CULG	2343	2355								IS,W
07	0000	0734	CULG				0004	0421					IIIN,W
			CULG	0046.5	0047	1							IIIG
			CULG				0046.5	0047	2				IIIB,V
			CULG				0137.5		2				IIIB
			CULG				0139	0140.5	1				IIIG
			CULG				0150	0155	1				IS
			CULG				0229.5	0230	2	0230	0230.5	1	IIIG,V,U
			CULG	0235.5	0236	1	0236		1				IIIB
			CULG	0237		1	0237		1				IIIB
			CULG				0238	0243				II	W
			CULG				0307.5	0308	1				IIIB
			CULG	0326	0344								IS,W
			CULG				0337.5	0338.5	2	0337.5	0338	1	IIIB,V
			CULG	0419	0509	1						IV	
			CULG				0421	0435	3	0422	0431.5	1	IIIS
			CULG				0423	0550	1			IV	
			CULG	0423.5	0433	1						IV	
			CULG				0427	0506	3			II	HB
			CULG	0540	0734								IN,W
			CULG				0550	0732					IIIN,W
			CULG				0552.5		3				IIIB
			CULG				0554.5		1				IIIB

SOLAR RADIO EMISSION
SPECTRAL OBSERVATIONS

APRIL 1981

DAY	TIMES OF OBSERVATION		STATION	EVENTS									SPECTRAL TYPE
				DECIMETRIC BAND			METRIC BAND			DEKAMETRIC BAND			
	START UT	END UT		START UT	END UT	INT	START UT	END UT	INT	START UT	END UT	INT	
07	2035	2400	CULG				2035	2400					IS,W
			CULG	2049.5	2050	1							IIIG
			CULG				2058	2400					IIIN,W
			CULG				2106	2349	1				IIIN
			CULG				2137	2140.5	2				IIIG
			CULG	2142	2142.5		2141.5	2142.5	3				IIIG
			CULG	2229	2247	1							IIIN
			CULG				2249	2249.5	3				IIIB
			CULG				2251	2252	3				IIIG
			CULG				2303	2303.5	3				IIIG
			CULG				2306.5		2				IIIB
08			CULG				0000	0734					IIIN,W
	0000	0734	CULG				0000	0734					IS,W
			CULG	0000	0726	1							IIIN
			CULG				0026	0701	1				IIIN
			CULG				0033		1	0033		1	IIIB
			CULG	0044	0045	3							IIIG
			CULG	0059.5		2							IIIB
			CULG	0223	0224	2	0223	0224.5	3	0223	0224	2	IIIG
			CULG				0241		3				IIIB
			CULG				0242	0243.5	3	0242.5	0243	1	IIIG
			CULG				0344	0344.5	2				IIIG
			CULG	0415	0415.5	2							IIIG
			CULG				0421.5	0423.5	3	0421.5	0423	1	IIIG,V
			CULG	0540.5	0545	2							IIIN
			CULG	0552		2							IIIB
			CULG				0640	0641	2				IIIG
	2034	2400	CULG	2034	2235	2	2034	2400	3				IS,C
			CULG	2235	2400	1							IS,C
			CULG	2309	2355	2							IIIN
			CULG	2352.5	2353	3							IIIG
09	0000	0734	CULG				0000	0240	2				IS,C
			CULG				0000	0150	1				IIIS
			CULG	0001	0423	2							IIIN
			CULG	0110	0734								IS,W
			CULG				0150	0405					IIIS,W
			CULG				0240	0405	2				IS,DC
			CULG				0251.5	0252.5	3				IIIG,V
			CULG				0255.5		1				IIIB
			CULG				0405	0734					IS,W
	2034	2400	CULG				2034	2155	1				IS,DC
			CULG				2034	2400					IIIN,W
			CULG	2034	2400								IN,W
			CULG				2155	2400					IS,W
10	0000	0733	CULG				0000	0630					IN,W
			CULG	0019	0733		0019	0733					IIIN,W
			CULG	0026	0700								IS,W
			CULG				0055.5		3	0055.5		2	IIIB
			CULG	0149	0150	3	0149.5		1				IIIG
			CULG	0238	0238.5	2	0238	0238.5	1				IIIG
			CULG	0454		3							IIIB
			CULG	0455.5	0456		0456		3				IIIB
			CULG				0630	0733	1				IS,DC
			CULG	0657	0658	2	0656.5	0658	3				IIIG,V
			CULG	0700	0733	1	0700	0733	1				IS
			CULG				0715	0733					SCINT
			CULG				2034	2108	1				IIIS
	2034	2400	CULG				2034	2140	1				IS,C
			CULG				2108	2400					IIIS,W
			CULG				2140	2400					IS,W
			CULG	2145	2400								IN,W
			CULG				2148		2				IIIB
			CULG				2253.5	2255	2				IIIG
11	0000	0733	CULG				0000	0226					IS,W
			CULG				0000	0210					IIIS,W
			CULG				0006.5		1				IIIB

SOLAR RADIO EMISSION
SPECTRAL OBSERVATIONS

APRIL 1981

DAY	TIMES OF OBSERVATION		STATION	EVENTS									SPECTRAL TYPE
				DECIMETRIC BAND			METRIC BAND			DEKAMETRIC BAND			
	START UT	END UT		START UT	END UT	INT	START UT	END UT	INT	START UT	END UT	INT	
11			CULG	0013.5	0014	1							DCIM
			CULG				0110.5	0111	1				IIIG
			CULG				0210	0733					IIIN,W
			CULG	0309	0428	1							IIIN
			CULG	0350	0733								IS,W
			CULG				0425.5		1				IIIB
	2033	2400	CULG				2033	2107	2				IS,DC
			CULG	2033	2400								IS,W
			CULG				2033	2400					IIIS,W
			CULG	2102	2102.5	2							IIIG
			CULG				2107	2336					IS,W
			CULG				2226.5		1				IIIB
			CULG				2336	2400	1				IS,DC,C
12			CULG	0000	0200	1							IS,C
			CULG				0000	0710	1				IIIS
	0000	0710	CULG				0000	0040	2				IS,C
			CULG				0025	0710	2				IIIN
			CULG				0040	0240	3				IS,C
			CULG				0043	0047	3				IIIGG
			CULG				0111.5	0113.5	3	0111.5	0112	1	IIIGG
			CULG	0123	0710	1							IIIN
			CULG	0200	0710								IS,W
			CULG	0240	0430	2							IS,C
			CULG	0405	0406.5	3	0405	0407	3	0405.5	0407	3	IIIG,V
			CULG				0430	0709	1				IS,C
			CULG	0540.5		1	0540.5		3				IIIB
			CULG				0632.5	0633.5	3				IIIG,V
			CULG				2033	2200	1				IV
	2033	2400	CULG				2033	2215	1				IS
			CULG				2033	2140	1				IIIS
			CULG	2136	2400	2							IV P
			CULG				2140	2202	3				II HB
			CULG							2143	2210		SWF,W
			CULG				2200	2400	2				IV
13			CULG				0000	0135					IIIN,W
	0000	0733	CULG	0000	0040	1	0000	0045	2				IV
			CULG	0041	0733								IS,W
			CULG				0045	0515	1				IV
			CULG				0135	0733					IIIS,W
			CULG				0149	0733	1				IIIN
			CULG	0223	0223.5	2							IIIG
			CULG				0312	0313.5	3	0312.5	0313	2	IIIG,V
			CULG				0341	0400					SCINT
			CULG				0515	0733	1				IS
			CULG	0534	0535	2	0534	0535.5	1				POSS II
			CULG				0617		2				IIIB
	2033	2400	CULG				2033	2133	1				IS,C
			CULG				2033	2400					IIIS,W
			CULG	2120	2400	1							IS
			CULG				2138	2400	1				IS,DC
			CULG				2209	2326	1				IIIN
			CULG	2216	2216.5	1							IIIG
14	0000	0733	CULG	0000	0733	1							IS
			CULG				0000	0305					IIIS,W
			CULG				0000	0225	1				IS,DC
			CULG				0225	0416					IS,W
			CULG				0303	0549	1				IIIN
			CULG				0305	0555					IIIN,W
			CULG				0555	0626	1				IIIS
			CULG	0559.5	0725	1							IIIN
			CULG				0559.5	0600	2				IIIB
			CULG				0626	0733					IIIS,W
			CULG				2033	2055					IIIS,W
	2033	2400	CULG	2033	2400	1	2033	2400					IS,DC
			CULG	2035	2242	1							IIIG,N
			CULG	2049.5	2051	3	2050.5	2051	1				IIIG
			CULG				2055	2136	1				IIIS

SOLAR RADIO EMISSION
SPECTRAL OBSERVATIONS

APRIL 1981

DAY	TIMES OF OBSERVATION		STATION	EVENTS									SPECTRAL TYPE
				DECIMETRIC BAND			METRIC BAND			DEKAMETRIC BAND			
	START UT	END UT		START UT	END UT	INT	START UT	END UT	INT	START UT	END UT	INT	
14			CULG				2136	2339					IIIS,W
			CULG				2221	2325	1				IIIN
			CULG	2329.5	2400	1	2340	2400	1			IV	
			CULG				2339	2400	2				IIIS
			CULG							2340	2400		SWF,W
15	0000	0732	CULG										
			CULG	0000	0010	1	0000	0011	1				CONT
			CULG							0000	0003	1	SWF
			CULG				0000	0416	1				IS
			CULG	0000	0732								IS,W
			CULG				0000	0254					IIIS,W
			CULG				0016	0254	1				IIIN
			CULG				0114		2				IIIB
			CULG	0126	0245	2							IIIN
			CULG				0126		2				IIIB
			CULG				0254	0343	1				IIIS
			CULG				0258	0321	2				IIIN
			CULG				0330	0415	2				DC,N
			CULG				0343	0732					IIIS,W
			CULG				0347	0732	1				IIIN
			CULG				0416	0715					IS,W
			CULG	0529.5	0530	1							DCIM
			CULG				0530.5	0531.5	2				IIIG
			CULG	0600	0600.5	2							DCIM
			CULG				0609.5	0610	2				IIIG
			CULG	0642.5	0644	2	0642.5	0645	3				IIIG,V
			CULG	0657	0658	3	0657	0658	2				IIIG
			CULG	0701	0702	1	0701	0702	2				IIIG
			CULG				0715	0732	2				IS,DC
			CULG				0720	0732	1				SCINT
	2032	2400	CULG	2032	2400								IS,W
			CULG				2032	2400					IIIS,W
			CULG				2032	2140	1				IS,DC
			CULG	2052	2325	2	2052	2241	2				IIIN
			CULG				2140	2400	1				IS,C
			CULG	2240.5	2241	2	2240.5	2241	3				IIIG,V
			CULG							2320	2400		SWF,W
16			CULG							0000	0315		SWF,W
	0000	0732	CULG	0000	0732								IS,W
			CULG				0000	0145	1				IS,C,DC
			CULG				0000	0105					IIIS,W
			CULG				0105	0144	1				IIIS
			CULG	0114	0126	1							IIIN
			CULG				0144	0606					IIIS,W
			CULG				0145	0553	1				IS,DC
			CULG				0553	0732	1				IS,C,DC
			CULG				0606	0638	1				IIIS
			CULG				0611	0653	2				IIIN
			CULG				0638	0732					IIIS,W
			CULG				2032	2400					IIIS,W
			CULG				2032	2105	1				IS,C
	2032	2400	CULG	2032	2400								IN,W
			CULG				2105	2400					IS,W
			CULG				2131	2132	1				IIIG
			CULG	2240	2243	1							DCIM
			CULG							2242	2400		SWF,W
17			CULG				0000	0730					IIIN,W
	0000	0730	CULG							0000	0400		SWF,W
			CULG	0009	0641	1	0009	0641	1				IIIN
			CULG	0031	0034	1							DCIM
			CULG				0035	0210					IS,W
			CULG				0111	0111.5	2				IIIG
			CULG	0130	0730		0210	0730					IN,W
			CULG	0305	0305.5	2	0305		2				IIIG
			CULG	0409	0410.5	1	0409	0414	3	0410	0411.5	2	IIIGG,V
			CULG				0715.5	0716	2				IIIG
	2033	2400	CULG	2033	2400		2033	2400					IS,W

SOLAR RADIO EMISSION
SPECTRAL OBSERVATIONS

APRIL 1981

DAY	TIMES OF OBSERVATION		STATION	EVENTS									SPECTRAL TYPE
				DECIMETRIC BAND			METRIC BAND			DEKAMETRIC BAND			
	START UT	END UT		START UT	END UT	INT	START UT	END UT	INT	START UT	END UT	INT	
17			CULG				2033	2400					IIIS,W
			CULG				2034	2400	1				IIIN
			CULG				2128.5	2129.5	2				IIIG
			CULG	2357.5		1	2357	2358	3				IIIGG
			CULG	2359.5		1	2359.5	2400	2				IIIG
18	0000	0731	CULG	0000	0731		0000	0501					IS,W
			CULG				0000	0230					IIIS,W
			CULG				0026		1	0026		1	IIIB
			CULG				0027	0640	1				IIIN
			CULG	0103		1	0103		1				IIIB
			CULG							0134	0149	1	SWF
			CULG				0226.5	0227.5	3	0227	0227.5	2	IIIG
			CULG				0230	0731					IIIN,W
			CULG	0234	0234.5	1							IIIG
			CULG				0304	0305	3	0304	0304.5	2	IIIG
			CULG	0325.5	0326	1							IIIG
			CULG				0329.5		2	0329.5		1	IIIB
			CULG				0406	0406.5	2	0406	0406.5		IIIB
			CULG				0414	0414.5	2				IIIG
			CULG				0501	0731	1				IS,DC
			CULG				0526.5	0527	2				IIIG
			CULG				2031	2057					IIIS,W
	2031	2400	CULG	2031	2400		2031	2115					IS,W
			CULG	2044	2044.5	1							DCIM
			CULG				2055	2055.5	1				IIIG
			CULG				2057	2400					IIIN,W
			CULG				2135	2139					IIIGG,W
			CULG				2142	2142.5	1				IIIG
			CULG	2227.5	2228	1	2227.5	2228	1				IIIG
			CULG	2339	2340.5	1	2339	2340.5	1				IIIGG
			CULG	2342.5	2343.5	1	2342	2343.5	3	2342	2342.5	1	IIIGG,U
19	0000	0731	CULG	0000	0731								IS,W
			CULG				0011	0330					IIIN,W
			CULG				0030.5	0031	1	0030.5		1	IIIG
			CULG				0211.5	0213	2				IIIG
			CULG				0248	0635	1				RSDP,N
			CULG	0252	0252.5	1	0252	0252.5	1				IIIG
			CULG				0254	0731	1				IIIN
			CULG				0330	0731					IIIS,W
			CULG				0343	0347	1				IIIGG
			CULG	0344.5	0345	1	0345	0345.5	3	0345	0345.5	1	IIIG
			CULG	0346	0347	2	0346.5		2				IIIG
			CULG				0401	0525					IS,C,W
			CULG	0435	0435.5	1	0435	0435.5	2				IIIG
			CULG	0438	0442								IIIN,W
			CULG				0525	0632					IS,W
			CULG				0540.5	0541.5	3				IIIG
			CULG				0542.5	0543	3				IIIG
			CULG				0632	0731	1				IS,DC
			CULG				0652.5	0653.5	2				IIIG
			CULG				0704	0705	2				IIIG
			CULG				0724	0725	3				IIIG
			CULG				2031	2330					IIIS,W
	2031	2400	CULG	2031	2400		2031	2400					IS,W
			CULG				2039	2345	1				IIIN
			CULG	2247.5	2253	1	2247.5	2253	1				IIIGG
			CULG				2252	2253	2				IIIG
			CULG				2317	2318	1				IIIG,U
			CULG				2323	2323.5	3				IIIB,U
			CULG				2330	2400					IIIN,W
20			CULG				0000	0454					IIIN,W
	0000	0404	CULG	0000	0404		0000	0046					IS,W
			CULG				0039.5	0040	1				IIIG
			CULG				0210.5						RSDP,W
			CULG	0229	0230	2	0229	0230.5	3	0229.5	0230.5	2	IIIG,V
			CULG	0230.5	0235.5	1	0230.5	0235	1				IIIN
			CULG				0233	0234	1				POSS II

SOLAR RADIO EMISSION
SPECTRAL OBSERVATIONS

APRIL 1981

DAY	TIMES OF OBSERVATION		STATION	EVENTS									SPECTRAL TYPE
				DECIMETRIC BAND			METRIC BAND			DEKAMETRIC BAND			
	START UT	END UT		START UT	END UT	INT	START UT	END UT	INT	START UT	END UT	INT	
20			CULG				0258.5						RSDP,W
			CULG				0318.5	0319	1				IIIG
	2031	2400	CULG	2031	2400		2031	2226					IS,W
			CULG				2035	2319					IIIN,W
			CULG				2116.5		1				IIIB
			CULG				2140	2141	2				IIIG
			CULG	2224.5	2225	1	2224.5	2225.5	1				IIIG
			CULG	2248	2252								IIIN,W
21	0000	0731	CULG	0000	0731								IN,W
			CULG				0047	0731					IIIN,W
			CULG	0124.5	0125	1	0124.5	0125	1				IIIG
			CULG				0128.5		1				RSDP
			CULG				0231	0717	1				IIIN
			CULG	0438	0440	1							DCIM
			CULG	0443	0444								IIIG,W
	2031	2400	CULG	2031	2400		2031	2400					IN,W
			CULG				2048	2116					IIIN,W
			CULG				2358.5	2359					IIIG,W
22	0000	0720	CULG	0040	0042		0042	0115					IS,W
			CULG	0112		1	0112		2	0112		2	IIIB
			CULG				0238	0239.5					IIIG,W
			CULG				0310	0720					IIIN,W
			CULG				0311	0634	1				N,RSDP
			CULG				0312	0312.5	1				IIIG
			CULG				0316	0317	1				IIIG
			CULG				0319	0408					IS,W
			CULG	0348	0352	1							DCIM
			CULG				0442		1				IIIB
			CULG				0449.5	0453	1				CONT
			CULG				0449.5	0455	2				IIIGG
			CULG				0600	0603	1				IIIN
			CULG				0636.5	0638.5	2				IIIGG
	2032	2400	CULG				2036	2102	1				IS
			CULG				2039.5	2040	1				IIIG
			CULG				2040	2328					IIIN,W
			CULG				2059	2203	1				RSDP,N
			CULG				2102	2323					IS,W
			CULG				2151	2151.5	1				IIIG
			CULG				2152	2152.5	3				IIIG
			CULG				2203	2204	1				IIIG
			CULG				2221.5	2224.5	1				IIIGG
23	0000	0730	CULG				0002	0020.5	2				II HB
			CULG				0004	0005	1				IIIG
			CULG	0004.5	0005.5	1							IV
			CULG				0007	0008.5	3				IIIGG
			CULG				0012.5	0016	1				IV
			CULG				0045	0045.5	2				IIIG
			CULG				0101	0254					IIIN,W
			CULG	0140.5	0141	1	0139	0141.5	2	0139.5	0141	1	IIIGG
			CULG	0153.5	0154	1							IIIG
			CULG	0444.5	0445	2							IIIG
			CULG				0506		1				IIIG
			CULG				0602.5	0603.5					IIIG,W
			CULG	0604.5		1	0604	0605	3				IIIG
	2030	2400	CULG	2030	2238	1	2030	2249	1				IS,C,DC
			CULG				2040	2400					IIIN,W
			CULG	2058	2058.5	2	2058	2058.5	2				IIIG
			CULG	2123.5	2124	1							DCIM
			CULG	2238	2400		2249	2400	1				IS
24	0000	0730	CULG	0000	0520	1							IS,C
			CULG				0000	0052	1				IS
			CULG	0023	0213	1	0023	0213	1				IIIN
			CULG				0037	0620					IIIN,W
			CULG	0042	0042.5	2							IIIG
			CULG	0042	0054								IV W
			CULG	0045.5	0046.5	3	0045	0046	2				IIIG

SOLAR RADIO EMISSION
SPECTRAL OBSERVATIONS

APRIL 1981

DAY	TIMES OF OBSERVATION START UT	TIMES OF OBSERVATION END UT	STATION	EVENTS: DECIMETRIC BAND START UT	DECIMETRIC BAND END UT	DECIMETRIC BAND INT	METRIC BAND START UT	METRIC BAND END UT	METRIC BAND INT	DEKAMETRIC BAND START UT	DEKAMETRIC BAND END UT	DEKAMETRIC BAND INT	SPECTRAL TYPE
24			CULG				0052	0140					IV W
			CULG				0052	0139	1				IS,DC
			CULG				0059	0112	2				II
			CULG							0125	0230	2	SWF
			CULG				0139	0344					IS,W
			CULG							0140	0205	1	SWF
			CULG	0328	0329	2	0326.5	0329	2				IIIGG
			CULG	0332	0333	2	0331	0333	2				IIIGG
			CULG				0344	0450	1				IS,DC,C
			CULG				0450	0615					IS,W
			CULG				0453	0535	1				DC,N
			CULG	0520	0730	1							IS
			CULG				0615	0730	1				IS,C,DC
			CULG				0620	0730					IIIS,W
	2030	2400	CULG	2135	2135.5		2136	2137					IIIG,W
			CULG				2218.5	2228	1				IN
			CULG	2220	2223	1							DCIM
25	0000	0730	CULG				0114	0115	1				IIIG
			CULG				0144	0305					IIIN,W
			CULG	0238	0242	1	0236	0243	1				IIIN
			CULG	0440	0650								IN,W
			CULG				0442		1				IIIB
			CULG	0530	0531.5	1							IIIG
	2030	2400	CULG				2030	2400					IS,W
			CULG	2034	2400								IN,W
			CULG				2040	2313					IIIN,W
			CULG				2214.5		1				IIIG
			CULG	2345	2346	1							DCIM
26	0000	0730	CULG				0000	0730					IS,W
			CULG	0002	0004	1							DCIM
			CULG	0015	0016.5								DCIM,W
			CULG	0020	0023	1							DCIM
			CULG	0050.5	0055	2							DCIM
			CULG				0127	0227	1				IIIN
			CULG				0221		1	0221		1	IIIB
			CULG				0223.5	0224.5	2	0223.5	0224.5	1	IIIG
			CULG	0311	0315	2							DCIM
			CULG	0414	0602								IS,W
			CULG				0642.5	0643	2				IIIG
			CULG				0651	0705					IIIN,W
			CULG	0716.5	0720	1							DCIM
	2031	2400	CULG				2035	2057.5					IIIG,W
			CULG				2051	2052.5					IW
			CULG				2149.5	2152					IIIG,W
			CULG				2151		1				IIIB
			CULG				2315	2315.5					IIIG,W
27	0000	0729	CULG	0155.5		1							IIIB
			CULG				0357						IIIB,W
			CULG	0359.5	0401		0401						IIIG,W
			CULG				0529	0529.5					UNCLF,W
	2030	2400	CULG										
			CULG	2252	2300	1							CONT
			CULG				2253	2330	1	2253	2330	2	SWF
28	0000	0730	CULG				0211	0211.5					IIIG,W
			CULG				0312	0315	1				IIIGG
	2030	2400	CULG				2036	2400					IIIN,W
			CULG				2039	2244					IW
			CULG				2112.5	2157.5	3				II
			CULG				2114	2147.5	1				IV
			CULG	2115	2140	1							IV
			CULG							2135	2400	1	SWF
			CULG	2208.5	2209	1	2208.5	2209	1				IIIG
			CULG				2215	2217	2				IIIG,V
			CULG				2235	2236	1				IIIG
			CULG	2345	2400	1							CONT
29			CULG				0000	0440					IS,W

SOLAR RADIO EMISSION
SPECTRAL OBSERVATIONS

APRIL 1981

DAY	TIMES OF OBSERVATION		STATION	EVENTS									SPECTRAL TYPE
				DECIMETRIC BAND			METRIC BAND			DEKAMETRIC BAND			
	START UT	END UT		START UT	END UT	INT	START UT	END UT	INT	START UT	END UT	INT	
29	0000	0729	CULG							0000	0300	1	SWF
			CULG	0000	0158		0000	0026					CONT,W
			CULG				0000	0604					IIIN,W
			CULG	0158	0250	1							CONT
			CULG				0343.5	0344	1				IIIG
	2030	2400	CULG				2133	2308					IIIN,W
			CULG				2139	2139.5	1				IIIG
			CULG				2139	2140.5	1				RSDP,N
			CULG				2140		1				IIIB
30	0000	0729	CULG				0013.5		1	0013.5		1	IIIB
			CULG	0115	0118		0115	0729					IIIN,W
			CULG				0116.5		1				IIIB
			CULG				0245.5		1				IIIB
			CULG				0308	0350	3	0310.5	0325.5	2	II HB
			CULG	0313	0318	2	0308	0517	3				IV
			CULG	0322	0324	1							I
			CULG				0345	0452					IS,W
			CULG	0418	0419	1	0418	0419	1				IIIG
			CULG	0514.5	0550	1							IIIN
	2029	2400	CULG				2048						IIIB,W

The symbols used under the column heading SPECTRAL TYPE have the following definitions:

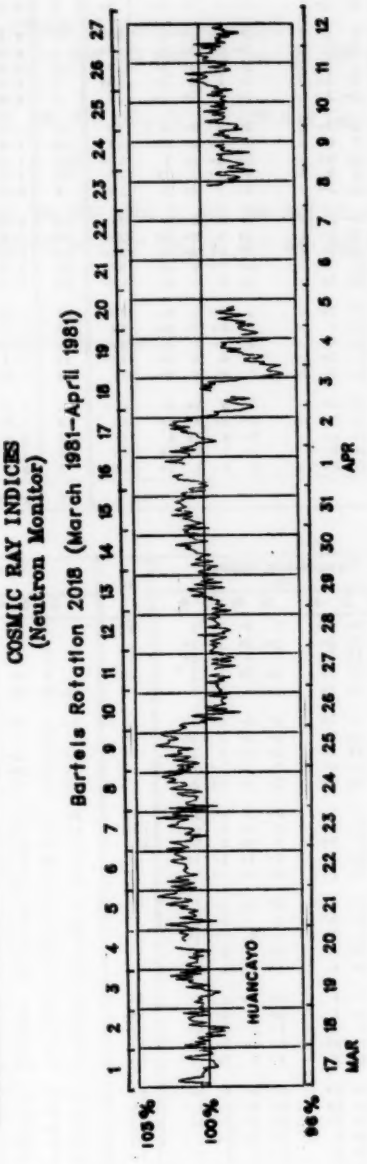
B = Single burst
G = Small group (< 10) of bursts
GG = Large group (> 10) of burst
C = Underlying continuum (particularly with Type I)
S = Storm in the sense of intermittent but apparently connected activity
N = Intermittent activity in this period
U = U-shaped burst of Type III

RS = Reverse slope burst
DP = Drifting pairs
DC = Drifting Chains
H = Herringbone
W = Weak
P = Pulsations
CONT = Continuum
UNCLF = Unclassified activity
DCIM = Fast drift

COSMIC RAY INDICES
(Neutron Monitors)

APRIL 1981

Apr 1981	HUANCAYO Average (cts/h) 100
1	1725.8(36)
2	1724.6
3	1697.6
4	1676.8
5	1688.3(36)
6	-
7	-
8	1701.7(6)
9	1692.6
10	1696.6
11	1703.6
12	1702.5
13	1703.5
14	1697.8
15	1691.9(36)
16	1691.1
17	1702.0
18	1697.1
19	1704.3
20	1704.5
21	1696.8
22	1700.2(38)
23	1700.0
24	1705.5
25	1707.0
26	1703.7
27	1708.6
28	1697.4
29	1709.3(6)
30	1709.3
MEAN	1701.2



For less than 24-hour coverage, parentheses enclose the number of hours for which data are available. For Climax and Huancayo, parentheses enclose the number of section hours whenever the sum of both sections falls below 40 hours.

GEOMAGNETIC ACTIVITY INDICES

APRIL 1981

Day		Three-Hourly Indices Kp									Ap	Cp	Three-Hourly Indices Km								Am	aa			
		1	2	3	4	5	6	7	8	Sum			1	2	3	4	5	6	7	8		N	S	M	
1		4+	4-	3	4	3+	4+	4-	3	29+	23	1.1	4-	3	3-	4-	3	4-	3+	3	35	33	32	31	34	
2	Q7A	1+	2	2	2+	3	3-	3	2+	19-	10	0.6	1	1+	2	2	3-	2-	3-	2	16	15	20	12	24	
3		2+	3+	1+	2+	4-	3+	3+	3-	22+	14	0.8	2+	3	1+	2-	3-	3	3+	2+	22	23	16	17	21	
4	Q8A	3-	2+	2-	2-	2+	2	4-	3	19+	11	0.6	3-	2+	2-	2-	2	2-	3	3-	18	17	15	11	20	
5	Q1	1-	0+	1-	1	1+	1	2-	2-	8+	4	0.1	0+	0+	0+	1-	1-	1	1+	1+	5	6	4	5	6	CK
6	Q8A	2-	3	4-	3-	2+	1+	1+	2	18	10	0.6	1+	2+	3	2+	2	1+	1+	2-	15	15	16	19	11	K
7	Q6A	2	2-	2	2	3-	2	3+	2-	17+	9	0.5	2	1+	1+	2-	2+	1+	3-	2	14	16	13	11	17	K
8	Q9A	3-	1	2+	2+	1	4-	3	3-	19-	11	0.6	3-	1	2+	1+	1	3	3-	2+	17	25	11	14	22	
9	Q4A	4-	3+	1-	0+	2-	1	1	2-	13+	8	0.4	3+	2	0+	0+	2-	1	1	2-	12	17	7	17	8	KK
10	Q3A	1	1+	2-	3	2-	2+	2+	2-	15	8	0.4	1-	1-	1+	2	1+	2	2	1+	10	12	6	7	11	CK
11		1-	2-	3-	3	6+	6	4-	6	30	39	1.4	0+	2-	3-	3	5	5-	3+	5	44	49	36	10	67	
12	D2	7	7	6-	5	7	6+	6-	6+	50	96	1.9	6+	6-	5-	5-	6-	6-	5-	6-	119	104	81	78	107	
13	D1	8	8+	8-	6-	6+	6-	6-	5	52+	121	1.9	7	7+	7-	5+	5	4+	5	4+	157	130	96	157	69	
14		5	4	5	3+	4-	5-	2	1+	29	27	1.2	4	3+	4+	3	3	4	1+	1	37	44	23	44	24	
15	Q5A	1-	2-	2-	2	3-	3	2+	2	16	8	0.4	1-	1+	1+	2	2+	2+	2+	2+	14	13	9	8	14	C
16		3	2-	2-	4	4	2+	2+	2	21	13	0.8	3	1+	2-	3+	3	2+	2+	2-	22	23	18	19	21	
17		2	3+	5-	3	3+	3	4-	3+	26+	19	1.0	1+	3	5-	3	3	3	3+	3+	35	29	34	35	30	
18		3	2+	1	2	1+	4+	3+	3+	21-	14	0.8	2+	2-	1	2	1-	4-	3-	3	20	22	16	13	25	
19	D5	6	6	3+	5-	6-	5-	4	2+	37-	45	1.5	5	5	3-	4+	4+	4	3+	2+	56	48	61	63	44	
20	D4	4	6+	5+	4	5+	5	5	6-	41-	53	1.6	3-	5+	5-	4-	4	4	4+	5	66	66	57	55	68	
21		4+	4+	5+	5-	5	4+	5	5-	38-	41	1.5	4-	4-	4+	4	5-	3+	4-	4	54	45	46	47	44	
22		5	5-	5	3+	4+	4-	5-	3+	34	33	1.3	4+	4-	4+	3	4-	3+	4+	3	47	43	44	41	47	
23		4	5-	5-	4+	4+	4-	4	4	34-	31	1.3	4-	4	4+	4-	3+	3	3+	4	47	38	42	43	38	
24		2-	4-	3+	4-	5-	4	4	3-	28-	22	1.1	2-	3	3	3+	4-	3+	3+	3-	33	39	24	22	41	
25		4+	4-	3	3-	3	4-	3	4-	27	19	1.0	3+	3	2+	2	3-	3-	2+	3+	25	29	20	25	25	
26	D3	3+	3+	6-	6-	7+	5	5+	6-	41+	62	1.7	3-	3	5	5+	6-	4	5-	5-	76	87	73	59	101	
27		6	5+	5-	5+	5-	5-	3-	4-	37	43	1.5	5	5	5-	5	4	3+	3-	3+	64	60	42	66	37	
28		2	1+	2-	3-	3-	4	2+	4	21-	13	0.8	2	1	1+	2+	2	4-	2-	4-	20	23	14	8	29	
29		5-	3+	3-	4	3+	3	3-	2+	26	19	1.0	4+	3-	2+	4-	3+	3-	3	2+	32	31	37	39	29	
30	Q2A	2	1+	2+	2-	3	1	2	1+	15-	7	0.4	2-	1+	2+	2-	3-	1	2-	1	12	15	11	12	14	K
									Mean		23	0.99									38.2	37.2	30.9	34.1	

Day	Three-Hourly Indices Kn								An	Three-Hourly Indices Ks								As
	1	2	3	4	5	6	7	8		1	2	3	4	5	6	7	8	
1	4-	3-	3-	4-	3	4-	3	3	35	4	3	3-	3-	3-	4-	3+	3	35
2	1-	2-	2+	2+	3-	2+	3	2+	17	1	1	2-	2	3-	1+	3-	2	14
3	2	3-	1+	2-	3	3	3+	2+	22	3-	3	2-	2-	2+	3-	3+	3-	22
4	2+	3-	2-	2-	2+	2+	3	3	20	3	2	2-	2-	2-	1+	3-	3-	17
5	0	0+	0+	1+	1+	1	2-	2-	7	1-	0+	0+	0+	0+	1-	1	1	4
6	1+	2+	3	2+	2+	2-	1+	2+	17	2-	3-	3-	2	2	1	1	1+	14
7	2-	1+	2-	2	2+	2-	3	2+	16	2	1+	1	1+	2+	1	2	2-	11
8	2+	1-	2+	2-	1+	3+	3	3-	19	3-	1	2+	1+	1-	3-	3-	2+	16
9	3	2	1-	0+	2-	2-	1+	2+	13	3+	2+	0+	0	2-	0+	0+	1+	10
10	1-	1	1+	3-	2-	2+	2+	2-	13	0+	0	1	2-	1	1+	2	1	8
11	0+	2-	3-	3	6-	5	4-	5	53	0+	2-	2+	3	4+	4+	3+	5-	39
12	6	6-	5	4+	6	6-	5	6-	122	6+	6	4+	5	5+	5+	5-	5+	115
13	7+	8-	7	5+	5	4+	5	5-	169	7	7+	6+	5+	5	4+	5-	4	144
14	4	3+	5-	3+	4-	4+	1+	1+	41	4	4-	4	3	3-	3+	1+	1-	33
15	1	1	1+	2+	3-	2+	2+	3-	16	0+	1+	1+	2	2	2	2+	2-	12
16	3	1+	2-	4-	3+	2+	3-	2	23	3	1+	2	3+	3-	2	2	1+	20
17	1+	3	5-	3	3	3	4-	3	37	2-	3	5-	3	3-	3	3	3+	34
18	3-	1+	1	2+	1-	4	3+	3+	23	2	2-	1	2	0+	3	2+	3	15
19	5	4+	3-	4+	5-	4	3	2+	55	5	5+	2+	4	4+	4	4-	2	57
20	3	5+	5-	4	4+	4	4	5-	68	3-	5	4+	4-	4	4+	5-	5	64
21	4-	4-	5-	4	5-	3+	4-	4-	56	4-	4-	4	4	4+	3+	4	4+	52
22	4	4	4+	3	3+	3	4+	3	46	5-	4-	4+	3-	4-	3+	4+	3-	48
23	4-	4	4	4	4-	3	4-	4-	48	4-	4-	5-	3+	3+	3-	3+	4	46
24	2-	3	3	3+	4	4-	3+	2+	34	2	3+	3+	3+	3+	3+	3+	3-	32
25	4-	3	3-	2	3-	3	2+	3+	27	3+	3	2+	2	2+	2+	2	3	23
26	3-	3+	5+	5+	6	4+	4+	5-	83	3-	3	5-	5	5	4	5-	5	69
27	5	5	5-	5+	4+	4-	3-	3	69	5	5-	4	5-	4-	3	3-	4-	59
28	2-	1	2-	3-	2+	4-	2	4-	22	2+	1-	1	2+	1+	3+	2-	4-	19
29	4	3-	2+	4	3+	3-	3-	2	31	5-	3	2+	3+	3	3	3	2+	33
30	2-	2-	2+	2-	3	1	2	1+	14	2-	1	2+	1+	2	1-	1+	1-	10
								Mean	40.5									35.9

Quiet days (Q) and disturbed days (D), geomagnetic planetary three-hour-range indices (Kp) (integers alone are equivalent to those normally given with a small zero), magnetic character figures (Cp), and average amplitude (Ap) (unit 2 nT) prepared by Geophysikalisches Institut at the University of Göttingen, F.R. of Germany for the International Service of Geomagnetic Indices. Ten most quiet days [Q1-Q0(10)] and five most disturbed days [D1-D5] are ordered from most quiet or disturbed, respectively. A or K means "not really quiet" (A = "Ap>6", K = "Ap≤6 but one Kp>30 or two Kp values>3-"). An asterisk means "not really disturbed" (Ap<20).

Geomagnetic three-hourly indices Km, Kn, Ks, daily mean values Am, An, As (unit 1nT), and indices aa are prepared by M. Menvielle of the Institut de Physique du Globe, Paris, France. For aa indices daily north (N) and south (S) values, and half-daily antipodal mean (M) values are given. Quiet 24-hour and 48-hour intervals centered on 1200 UT are indicated for really quiet as C and for quiet but with some slightly disturbed three-hour intervals as K. The first hundred years series of aa is in IAGA Bulletin No.33, and complementary data are in IAGA Bulletin No.39.

ERRATA:

Conversion in 1979 to a new computer with a different word size caused values of indices aa to be truncated if they exceeded 99; the machine read and printed only the two least significant digits. Correct values of the affected indices are listed below. Both half-daily values are given, too, to make clear which of the two entries should be corrected.

Date	N	S	M
21 Feb 1979			66 102
10 Mar			54 101
25 Apr	109		27 148
26 Apr			103 15
13 Aug			53 108
20 Aug			33 100
29 Aug			59 111
18 Sep			100 63
25 Jul 1980			13 100
19 Dec	118	123	63 178
06 Feb 1981			24 116

NOTE:

aa indices are provisional from 1 January 1981 until further notice, in connection with the change of the Southern Hemisphere observatory.

SUDDEN COMMENCEMENTS AND SOLAR FLARE EFFECTS

APRIL 1981

PRELIMINARY REPORT ON RAPID MAGNETIC VARIATIONS

The meaning of the station symbols is given in the IAGA-Bulletin nr. 32h, page 106-116.
Times of ssc are mean values.

Sudden commencements followed by a magnetic storm or a period of storminess (ssc)

07 1954: A: ESK WNG FRD; B: SOD WIT DOU VIC AQU COI MPO; C: NGK HAD KGL DUM (si: B: EBR TOL)

11 0724 A: FRD MPO; B: SOD WNG; C: NGK (si: B: TOL)

11 1339 A: WNG WIT DOU MMB AQU EBR TOL KAK HTY KNY; B: NGK VIC KGL; C: HAD CZT DUM (si: A: MPO)

12 1419 A: WNG HAD DOU; C: KGL (si: A: WIT; B: TOL)

15 1016 B: VIC AQU; C: WNG (si: A: MPO)

18 1503 A: SOD ESK WNG COI; B: WIT HAD DOU VIC MMB AQU TOL PMG MPO; C: NGK EBR KAK HTY KNY CZT

26 0813 A: SOD NUR WNG WIT HAD DOU VIC EBR COI FRD KAK HTY MPO CZT KGL; B: NGK MMB AQU TOL KNY PMG DUM

Solar-flare effects (sfe)

Effects confirmed by ionospheric or solar observations are underlined.

02 1103 - 1132 WNG EBR MPO

03 0203 - 0222 HTY KNY

04 0502 - 0535 MMB KAK HTY KNY

10 1106 - 1150 WNG

16 2240 - 2305 KNY

17 0340 - 0405 HTY KNY

19 0650 - 0720 HTY KNY

24 1350 - 1420 WNG (bp: B: MPO; bps: C: TOL)

26 0717 - 0735 MMB KAK KNY

RADIO PROPAGATION QUALITY INDICES

MARCH 1981

DAY	TOKYO	NEW YORK	TEHERAN	OSLO	BRACKNELL
1	5.9	9.3	7.8	12.4	14.1
2	5.6	8.1	7.3	12.9	14.1
3	5.8	8.5	7.5	12.8	14.2
4	5.6	8.4	8.2	12.1	14.2
5	5.0	7.1	7.7	9.8	13.3
6	5.7	8.6	9.0	12.9	14.4
7	5.6	8.1	8.4	12.3	14.0
8	5.8	8.3	8.3	13.5	14.7
9	5.8	8.5	9.0	12.9	14.5
10	5.9	8.6	9.0	13.1	14.3
11	6.3	9.1	8.9	13.5	14.6
12	5.6	9.0	7.7	13.2	14.4
13	5.5	8.9	8.4	12.2	14.4
14	5.4	8.0	7.6	10.4	14.0
15	5.3	8.0	7.7	11.6	14.1
16	5.4	8.3	7.7	11.8	13.9
17	5.5	8.7	7.7	12.9	14.0
18	5.5	8.2	7.8	11.9	14.2
19	5.7	8.8	8.8	13.5	14.1
20	5.7	8.4	7.7	12.7	14.3
21	5.8	8.8	8.4	14.0	14.5
22	6.0	8.9	8.4	14.3	14.5
23	5.7	9.2	8.3	14.1	14.5
24	6.1	9.1	9.0	15.1	14.5
25	5.3	8.8	7.3	12.6	14.1
26	5.3	7.5	8.1	12.1	14.1
27	5.4	8.7	8.4	13.7	14.4
28	5.7	8.7	8.0	13.1	14.5
29	5.4	8.6	8.0	12.9	14.6
30	5.4	8.5	8.3	13.9	14.1
31	5.4	7.6	7.8	13.5	14.3
MEAN	5.6	8.5	8.1	12.8	14.3

CALCULATION OF QUALITY INDICES (Q)

From all 24 hourly field strength values and from all frequencies of the same circuit a median field strength value is calculated (FD). This daily value is compared with the average value (FA) of the preceeding 27 days (1 sun rotation).

$$Q = 6.0 + 20 \log(FD/FA)/3.0$$

The quality indices vary from 0.0 to 9.9 where 6.0 is normal. Conditions are "normal" (index = 6.0), if they correspond to the average of the preceeding 27 days.

Scale for Quality Indices

0.0 - 1.0 = very poor
1.1 - 3.0 = poor
3.1 - 5.0 = fair
5.1 - 7.0 - normal
7.1 - 9.0 = good
9.1 - 9.9 = very good

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